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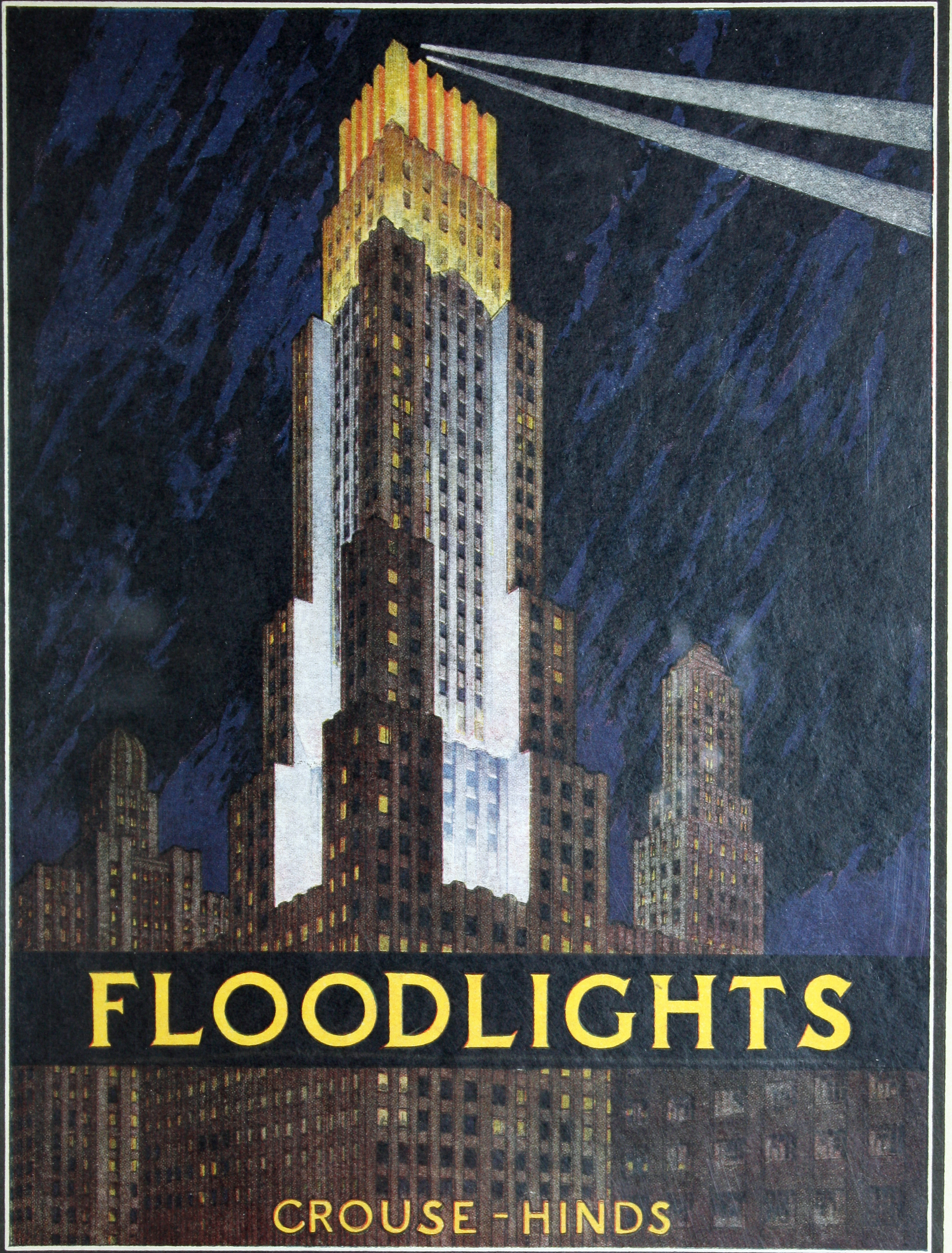

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Floodlights
and
Industrial Lighting Units

CATALOG 312

February 1, 1930

Supersedes all previous Floodlight Catalogs

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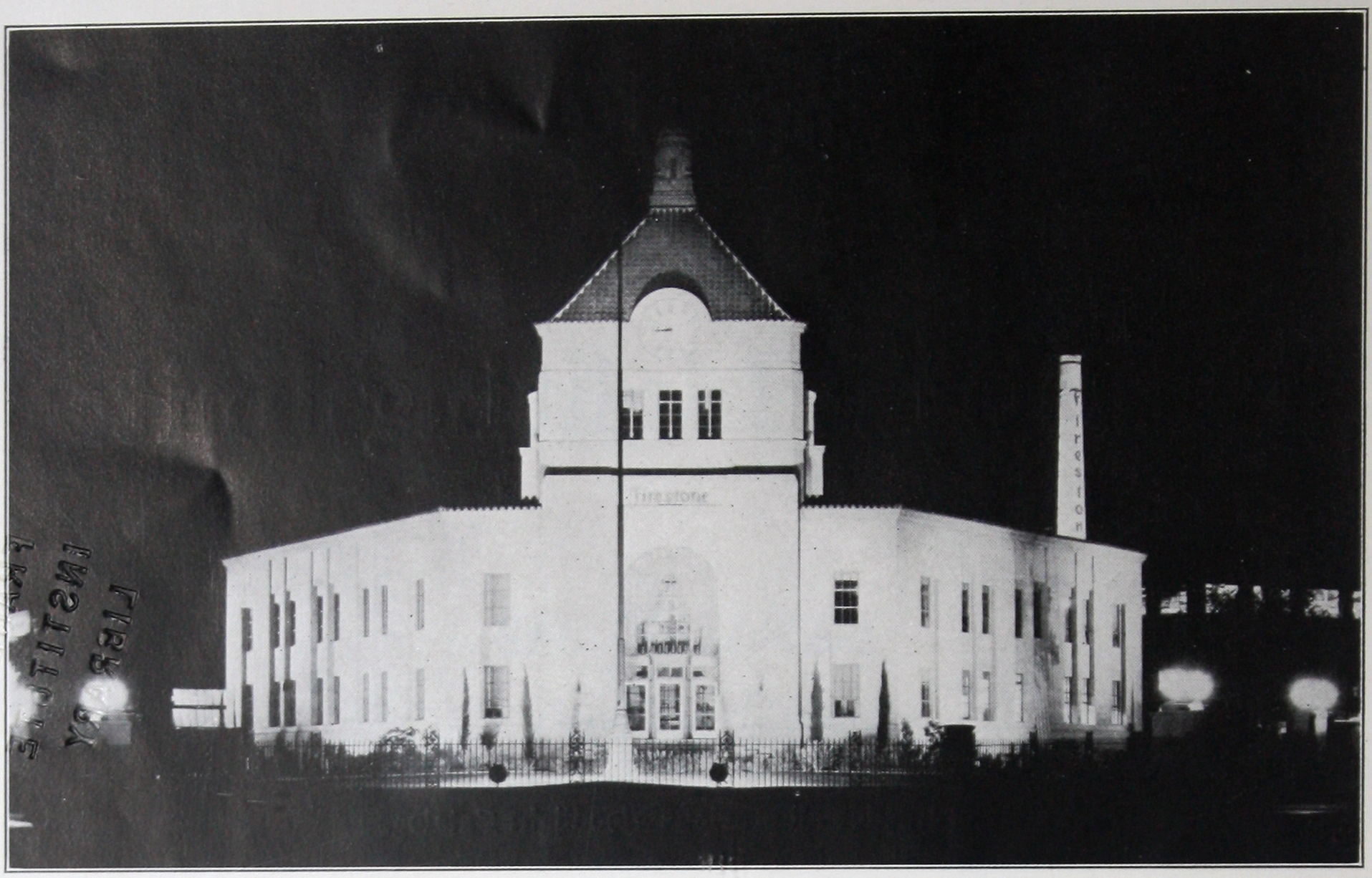


Firestone Administration Building Illuminated—Los Angeles, Calif.

State Capitol Illuminated—Olympia, Wash.

FLOODLIGHTING

Floodlight Classification

Floodlight projectors are made in various sizes and styles to conform to the requirements of different classes of service. They can be broadly classified as Short Range, Medium Range, and Long Range. Some types can be made to conform to more than one classification by varying reflectors, lenses, and lamps.

Medium Range Floodlights fill the majority of floodlighting requirements, and the other types can be regarded as more or less special. The natural spread of the reflector varies from approximately 20 degrees to 36 degrees. This spread can be increased by throwing the lamp out of focus and by using spread or diffusing lenses. Types ADA, LCE, and TTE projectors are medium range units when used with standard PS-bulb lamps, and will meet most floodlighting requirements.

Short Range Floodlights are equipped with diffusing reflectors, and throw a wide spill of light of comparatively low candle power. They are used where the floodlights must be mounted very close to the area to be lighted. They are efficient for that purpose, but should not be used for projecting light to any distance. Type MSA and types RM, RMU, and RME equipped with porcelain enameled reflectors, are representative of this class.

Long Range Floodlights are used for spotting distant objects or lighting restricted areas where the beam of light must be confined to a small area. They use concentrated filament lamps. Types LCA, LCE, TTA, and TTE projectors can be supplied for use with these lamps and are satisfactory for all except extremely long range projection. When the narrowest possible beam is required, it is necessary to use a reflector designed for such service. These reflectors are accurately ground and polished, and confine the light beam to a smaller divergence. Types DCE, LDA, and LDE projectors meet these requirements.

Selection of Floodlights

The selection of the proper floodlight for any given service requires a careful consideration of the beam divergence, size of unit, and efficiency. In many cases, the selection of the proper unit should be left to the judgment of a competent illuminating engineer. Considerable information on this subject is given on pages 39 to 45. A brief discussion of some of the main classes of floodlight applications is given below:

Airport Lighting

See equipment illustrated on pages 28 and 29.

Buildings

This includes public buildings, office buildings, stores, banks, and churches. There are two methods of lighting buildings. The one most generally used is the placing of floodlights across the street; while the other places the floodlights on the ground or on poles within 50 to 150 feet from the building. Such buildings are best lighted by type LCA, LCE, or ADA-16 floodlights. The largest size units which will provide even lighting should be used. Sufficient units should be used so that every portion of the building receives light from more than one projector.

Most new office buildings are designed with the upper stories set back, providing ledges which can be utilized to conceal floodlights and the lighting can be done from the building itself. Attempts are sometimes made to floodlight buildings from very narrow ledges which often have no parapet, leaving the unit in full view. This type of lighting is almost never satisfactory, as the light is projected at too sharp an angle to be effective, and an uneven and spotty appearance is the result. Where it is desired to light more than one or two stories of a building from a ledge, the ledge should be at least six to ten feet wide, and surrounded by a parapet. Types ADA, LCE, and TTE floodlights are recommended for this application.

Construction Work

Types ADA-16, LCE-20, and LCE-24 projectors provide a powerful working light. Spread lenses are generally suitable.

Electric Fountains

Types FDA-12 and FDV-12 fountain floodlights with colored lenses will provide beautiful color effects. The floodlights should be on several circuits, with motor-driven dimmers.

General Yard Lighting

This includes yards of industrial plants, lighted for protective purposes or night operation, prison yards, parking spaces, and residence yards. Types ADA, LCE, and TTE floodlights meet these requirements. The floodlights can generally be mounted on roofs of buildings and should be mounted high enough to prevent glare. When it is necessary to project the light to a considerable distance, floodlights with plain lenses should be used to light the distant parts of the yard, and floodlights with spread or diffusing lenses to light the yard near the floodlights.

Parking spaces should be lighted with units mounted as high as possible, and usually with diffusing lenses, to eliminate any glare. Wherever possible, the light should be projected perpendicularly to the line of cars driving in and out, and should be projected from more than one side.

Residence yards can usually be lighted with type ADA-12 or TTE floodlights with diffusing lenses. A switch on the outside of the house, where it can be reached from the driveway, is a great convenience when driving in at night, flooding the yard and approach to the garage with light.

Outdoor Sports

Playing fields for football and baseball are best lighted with type LCE-20 or LCE-24 floodlights with spread lenses. They should be mounted high to avoid glare. Complete specifications for lighting any type of athletic field or playground will be furnished upon request.

Railroad Yards

Railroad yards are usually lighted with type LCE-20 or LCE-24 floodlights mounted on steel towers 75 to 120 feet in height. The higher towers are preferable, as they provide a better light distribution and reduce glare. These floodlights should be equipped with plain lenses and standard PS-bulb lamps, either 1000 or 1500-watt.

Signs

Most signs can be lighted efficiently and effectively with type LCA, LCE, TTE, or ADA floodlights. For long narrow signs, spread lens should be used. As a rule, signs require a much higher intensity than buildings.

TYPE ADA-12 FLOODLIGHT

Medium and Long Range

200-Watt, PS-30 Lamp

250-Watt, G-30 Lamp

Type ADA-12

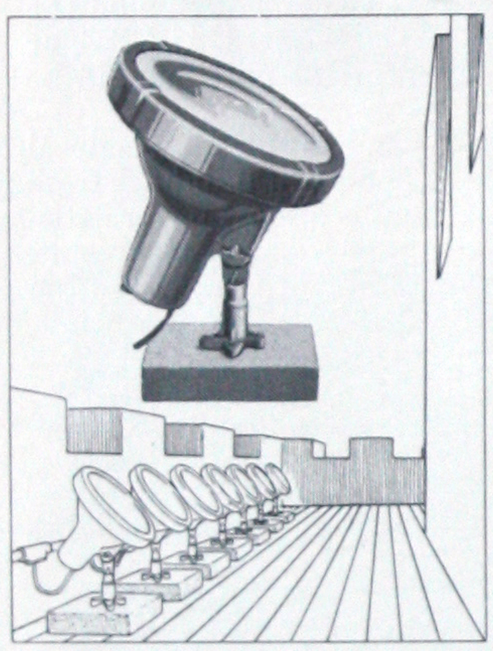


Fig. 1

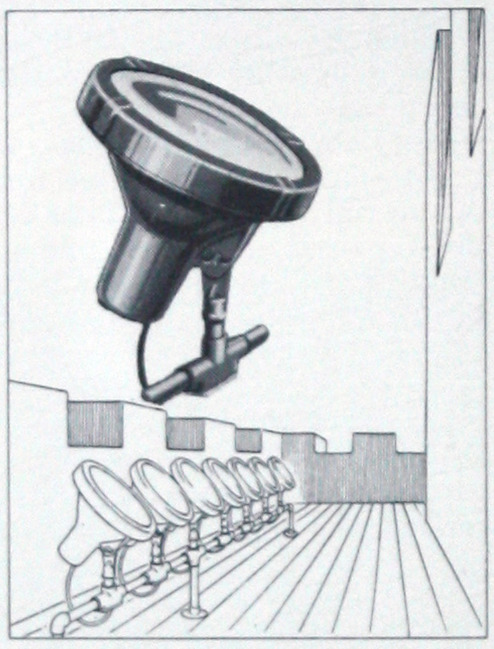


Fig. 2

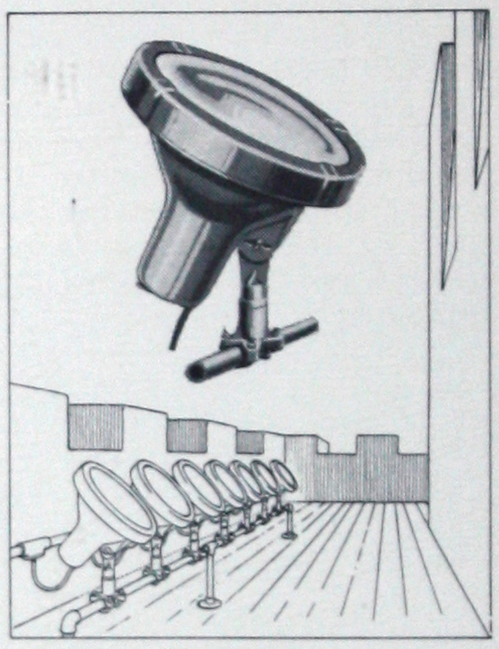


Fig. 3

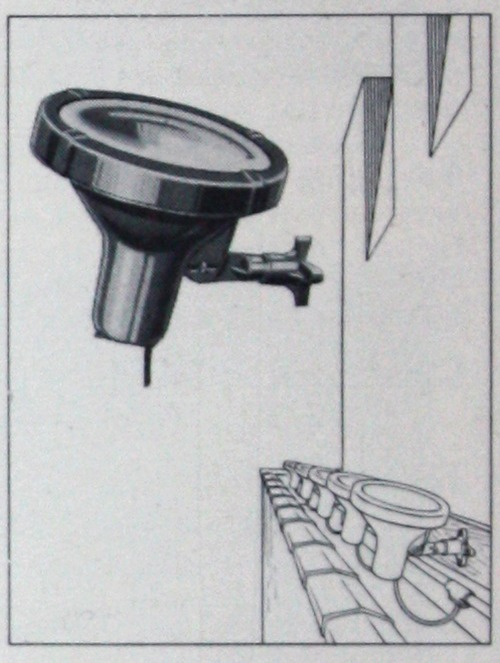


Fig. 4

Type ADA-12 floodlight is a small compact unit adapted to all kinds of floodlighting service. It is universal both in light distribution and in ease of installation.

The light distribution can be varied from a narrow beam spotlight to a wide angle, short range floodlight. The beam can be made either round or elliptical. Colors can be obtained with heat-resisting colored lenses.

Type ADA-12 universal floodlight is furnished complete, ready to install in any one of the ways illustrated above and described below:

Fig. 1 shows type ADA-12 floodlight with standard, small, convenient base bolted to a horizontal surface with four ¼-inch bolts.

Fig. 2 shows how type ADA-12 floodlight can be mounted on the conduit connecting a row of floodlights. Type TB Condulet with a one-wire hole porcelain cover is used, a short nipple being used in the top hub of the Condulet. The bottom casting of the floodlight base is removed; the socket in the upper casting of the swivel support is a slip fitter for ¾-inch pipe.

Fig. 3 shows type ADA-12 floodlight clamped to a pipe by means of the U-bolts which are furnished with each floodlight. These U-bolts will clamp the base to any pipe from ¾ to 1¼ inches.

Fig. 4 shows type ADA-12 floodlight bolted to a vertical surface. No extra bracket is required to mount it in this position. It can be fastened to any wall or pole and tilted at any angle desired.

TYPE ADA-12 FLOODLIGHT

Medium and Long Range

200-Watt, PS-30 Lamp **250-Watt, G-30 Lamp**

HOUSING: Cast silicon-aluminum alloy, which is not affected by the action of salt atmosphere. It is non-corrosive and will not require painting for protective purposes, under normal conditions. The unit is non-ventilated, dust-tight, and weatherproof.

REFLECTOR: 11½-inch crystal mirrored glass with hammered surface when used with the PS-bulb lamp; and smooth surface when used with the G-bulb lamp. See page 38.

MOUNTING: Adjustable, with swivel base. By removing the base casting, a slip-fitter base is obtained which is designed to fit over a ¾-inch pipe. Two U-bolts are included with each floodlight. They will clamp the floodlight to any pipe from ¾ to 1¼ inches (see illustrations on page 4).

FOCUSING MECHANISM: Operated from outside of case. See pages 32 and 33.

LAMP RECEPTACLE: Porcelain medium screw base (Cat. No. HL8509).

WIRING CONNECTIONS: The electrical outlet is provided in the rear of the case. A piece of two-conductor cable connected with the lamp receptacle on the inside enters the housing through a watertight stuffing box.

DOOR FRAME: Cast silicon-aluminum alloy of same composition as case; clamped to case by a one-eighth turn; provides a dust-tight and weatherproof fit.

LENS: Clear Pyrex, or colored, convex, heat-resisting lens in plain, spread, or diffusing styles. See listings below and on pages 34 and 35.

LAMPS: 150-watt, PS-25 bulb; 200-watt, PS-30 bulb; or 250-watt, G-30 bulb. (When using the G30-bulb lamp, the floodlight must not be tipped more than 45 degrees below the horizontal.) See pages 36 and 37 for lamp data.

LOUVERS: Circular louvers for eliminating all spill light, or straight louvers for eliminating spill light on any one side, can be provided. See page 38.

VOLTAGE: The voltage of the lamp should correspond to the voltage of the circuit. Frosted lamps are not suitable for floodlighting and should not be used. The 150 or 200-watt, PS-bulb lamp should be used for short range, and the 250-watt, G30-bulb lamp for long range. When ordering the 250-watt lamp, specify for "Floodlight Service". These lamps are also made for "Projection Service", but the projection lamps have a very short life.

FLOODLIGHTING FROM SERIES STREET LIGHTING CIRCUITS: Where multiple circuits are not available, floodlights can be connected to series street lighting circuits by using small series-multiple transformers, or in some cases, by using series lamps in the floodlights.

PACKING: Type ADA-12 floodlights are packed in individual cartons.

DIMENSIONS: See page 47.

FINISH: Aluminum.

NET WEIGHT: 10¼ lbs.

SHIPPING WEIGHT: 14½ lbs.

Lens		Smooth Reflector		Hammered Reflector	
Style	Color	Cat. No.	List Prices	Cat. No.	List Prices
Plain	Clear	40823	On Request	40824	On Request
Diffusing	Clear	40826		40827	
Spread	Clear	40829		40830	
Plain	Red	40832		40833	
Diffusing	Red	40835		40836	
Spread	Red	40838		40839	
Plain	Amber	40841		40842	
Diffusing	Amber	40844		40845	
Spread	Amber	40847		40848	
Plain	Green	40850	On Request	40851	On Request
Diffusing	Green	40853		40854	
Spread	Green	40856		40857	
Plain	Purple	40859		40860	
Diffusing	Purple	40862		40863	
Spread	Purple	40865		40866	
Plain	Blue	40868		40869	
Diffusing	Blue	40871		40872	
Spread	Blue	40874		40875	

Catalog numbers do not include incandescent lamps.
Focusing Directions, pages 32 and 33. **Illumination Data,** pages 40 and 41.

TYPES TTA AND TTE FLOODLIGHT PROJECTORS

Medium and Long Range

13⅝-Inch Reflector **500-Watt Lamp**

Types TTA and TTE floodlight projectors differ only in their forms of mounting. Type TTA is the same as type PS-5, which has been listed in previous catalogs, except with several improvements in mechanical construction. These floodlights are very compact and efficient.

DUST-TIGHT: The cases of these projectors are dust-tight and weatherproof. They are designed to radiate the heat of the lamp without ventilation. In a projector which is ventilated, the stream of air passing through carries with it all the dust and gas present in the atmosphere. The dust collects on the reflector, lamp, and lens and soon cuts the light output to a small fraction of its initial value. This dust is difficult to remove, and proper maintenance demands very frequent cleaning. Types TTA and TTE projectors stay clean on the inside, and an occasional wiping off of the outside of the lens will keep them operating at full efficiency.

SELECTION OF LAMP: Most floodlighting installations do not require narrow beam spread or extremely high beam candle power. The standard lighting service lamps should be used wherever possible on account of their higher efficiency, lower cost, and longer life. When a small area must be lighted from a distance, a narrow beam spread is necessary, and for this purpose types TTA and TTE projectors are listed with the lamp receptacle arranged for G-bulb concentrated filament floodlighting lamps.

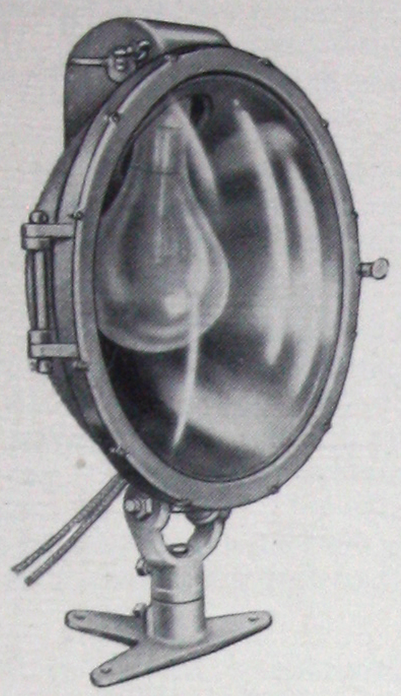
SELECTION OF REFLECTOR: The filaments of general lighting service PS-bulb lamps are relatively large and extended. When used with a smooth glass reflector, the beam from such a lamp is uneven, with bright streaks or filament images. Types TTA and TTE projectors for PS-bulb lamps are equipped with hammered glass reflectors. The hammered surface smooths out the beam and leaves it remarkably uniform. When concentrated filament G-bulb lamps are used, a smooth glass reflector is furnished.

Top of Building Illuminated

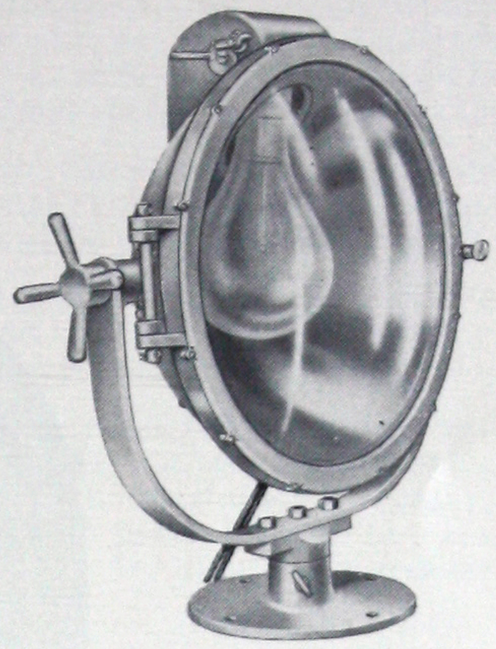
TYPES TTA AND TTE FLOODLIGHT PROJECTORS

Medium and Long Range

13⅝-Inch Reflector — 500-Watt Lamp



Type TTA
(Supersedes Type PS-5)



Type TTE

HOUSING: Cast silicon-aluminum alloy, dust-tight, and weatherproof.

REFLECTOR: 13⅝-inch crystal mirrored glass with hammered surface when used with standard lamp, and smooth surface when used with concentrated filament lamp. The smooth reflector will be furnished with the projector arranged for PS-bulb lamp without additional charge, if specified on the order. See page 38.

MOUNTINGS: Type TTA, quadrant. Type TTE, trunnion.

FOCUSING MECHANISM: Hand operated from the outside of case. See pages 32 and 33.

LAMP RECEPTACLE: Composition Mogul screw base (Cat. No. HL8755).

WIRE: Two leads No. 14 gauge stranded, weatherproof wire.

DOOR FRAME: Cast silicon-aluminum alloy, hinged to case. A gasket makes a weatherproof joint.

DOOR CATCH: Special "C" clamp to apply pressure directly over joint and gasket.

LENS: Clear, plain, convex, Pyrex, heat-resisting. Clear spread or diffusing, convex, heat-resisting lens or colored plain lens can be furnished, if specified on the order. See pages 34 and 35.

LAMPS: 300 or 500-watt, PS bulb; 500-watt, G-40 bulb. See pages 36 and 37 for lamp data.

LOUVERS: Circular louvers for eliminating all spill light, or straight louvers for eliminating spill light on any one side, can be provided. See page 38.

DIMENSIONS: See page 46 for type TTA, and page 48 for type TTE.

FINISH: Case, natural aluminum; base, galvanized.

NET WEIGHTS: TTA, 20 lbs.; TTE, 32 lbs.

SHIPPING WEIGHTS: TTA, 50 lbs.; TTE, 62 lbs.

Type	Reflector	Lamp		Mounting	Catalog Number	List Prices
		Watts	Bulb			
TTA	Hammered Smooth	300 or 500 500	PS G-40	Quadrant Quadrant	**40301** **40299**	On Request
TTE	Hammered Smooth	300 or 500 500	PS G-40	Trunnion Trunnion	**40521** **40520**	

Door Frames Complete with Lenses

Style	Catalog Number	List, each
Door Complete with Clear Plain Lens	**HL741**	**$21.00**
Door Complete with Clear Spread Lens	**HL742**	**21.00**
Door Complete with Clear Diffusing Lens	**HL743**	**21.00**
Door Complete with Plain Red Lens	**HL744**	**23.75**
Door Complete with Plain Amber Lens	**HL745**	**27.75**
Door Complete with Plain Green Lens	**HL746**	**27.75**
Door Complete with Plain Blue Lens	**HL747**	**27.75**

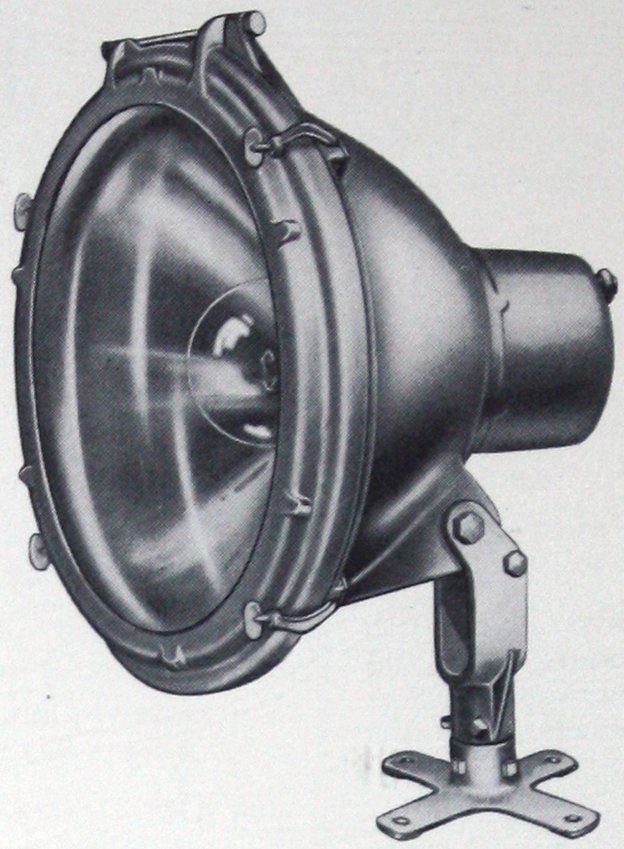
Catalog numbers do not include incandescent lamps.
Focusing Directions, pages 32 and 33. **Illumination Data,** pages 40 and 41. **Special Bases and Brackets,** pages 30 and 31.

TYPE ADA-16 FLOODLIGHT PROJECTOR

Medium and Long Range

16-Inch Reflector

1000-Watt Lamp



Type ADA-16

Type ADA-16 floodlight projector is a newly designed, efficient, and compact unit. It is a universal 1000-watt floodlight with a choice of reflectors, lenses and lamps which will vary its light distribution from that of a narrow beam projector to a wide angle, short range floodlight. It is simple to install and easy to maintain.

DUST-TIGHT: The case of the ADA-16 floodlight projector is dust-tight and weatherproof. The large radiating surface makes ventilation unnecessary. In a projector which is ventilated, the stream of air passing through carries with it all the dust and gas present in the atmosphere. The dust collects on the reflector, lamp, and lens and soon cuts the light output to a small fraction of its initial value. This dust is difficult to remove, and proper maintenance demands very frequent cleaning. Type ADA-16 projector stays clean on the inside, and an occasional wiping off of the outside of the lens will keep it operating at full efficiency.

SELECTION OF LAMP: The type of lamp to be used depends entirely on the beam spread required to cover the area to be lighted. The standard 750 or 1000-watt, PS52-bulb, 115-volt, general lighting service lamp should be used whenever a narrow beam is not required, on account of its higher efficiency, lower cost, and longer life. When a narrow beam of high beam candle power is required, the 1000-watt, G40-bulb, 115-volt, floodlight service lamp should be used. **Note:** The 1000-watt, G40-bulb floodlight service lamp must not be burned within 45 degrees of base up on account of the construction of its filament. This means that, when used with type ADA-16 floodlight, the floodlight must not be tipped down more than 45 degrees below the horizontal. See page 36.

SELECTION OF REFLECTOR: Type ADA-16 floodlight, for use with PS-bulb lamps, is listed with either a smooth or a hammered reflector. The hammered reflector should generally be used in conjunction with a clear lens. The hammered surface eliminates the filament images and uneven appearances of the beam which are generally produced by the large filament of a general lighting service lamp, and leaves a beam which is slightly wider, but much more uniform. When used with a spread or diffusing lens, the hammered reflector produces a wider beam than the smooth reflector. Type ADA-16 floodlight, for use with G40-bulb floodlight service lamps, is always used with the smooth reflector.

TYPE ADA-16 FLOODLIGHT PROJECTOR

Medium and Long Range

16-Inch Reflector **1000-Watt Lamp**

HOUSING: Cast silicon-aluminum alloy, dust-tight, and weatherproof. It is non-corrosive and will not require painting for protective purposes, under normal conditions.

REFLECTOR: 16-inch crystal mirrored glass with either smooth or hammered surface when used with PS-bulb lamp; and smooth surface when used with G-bulb lamp. See page 38.

MOUNTING: Non-corrosive, adjustable, with swivel base. By removing the base casting, a slip-fitter base is obtained which is designed to fit over a 1¼-inch pipe. Two special bases can be furnished. One is designed for use with U-bolts to clamp to any size pipe not larger than 2 inches. The other is a large galvanized, cast feraloy base with bolt holes in accordance with A.R.E.E. standard for railroad floodlight towers. See page 31.

FOCUSING MECHANISM: Operated from outside of housing. See pages 32 and 33.

LAMP RECEPTACLES: Porcelain Mogul screw base (Cat. No. HL2128 for PS-bulb lamp; HL7136 for G-bulb lamp).

WIRING CONNECTIONS: A connection box with cover having threaded hub, and with binding posts for convenient connection is provided on the rear of the case. A CGB295 connector or stuffing box is provided for making a watertight connection to the lead wires. This connector has a rubber bushing which will clamp flexible cord from ½ to ⅝-inch diameter. CGB285 connector with lead sleeve for connecting to armored cable from $^{37}/_{64}$ to ⅝-inch diameter will be supplied without additional charge, if specified on the order.

LOUVERS: Circular louvers for eliminating all spill light, or straight louvers for eliminating spill light on any one side, can be provided. See page 38.

DOOR FRAME: Cast silicon-aluminum alloy, hinged at top and clamped to the housing by four "C" clamps. A gasket is provided between the door and the housing.

LENS: Clear, plain, convex, Pyrex, heat-resisting. Spread or diffusing, convex, heat-resisting lens can be furnished without additional charge, if specified on the order. See pages 34 and 35. Color screens can be furnished. Information on request.

LAMPS: 750 or 1000-watt, PS-52 bulb; 1000-watt, G-40 bulb. See pages 36 and 37 for lamp data.

DIMENSIONS: See page 46.

PACKING: Type ADA-16 projectors are packed in individual cartons.

FINISH: Aluminum.

NET WEIGHT: 47 lbs.

SHIPPING WEIGHT: 60 lbs.

Type	Reflector	Lamp		Catalog Number	List Prices
		Watts	Bulb		
ADA-16	Hammered Glass	750 or 1000	PS-52	**41056**	On Request
	Smooth Glass	750 or 1000	PS-52	**41057**	
	Smooth Glass	1000	G-40	**41058**	

Catalog numbers do not include incandescent lamps.
Focusing Directions, pages 32 and 33. **Illumination Data,** pages 40 and 41. **Special Base and Bracket,** page 31.

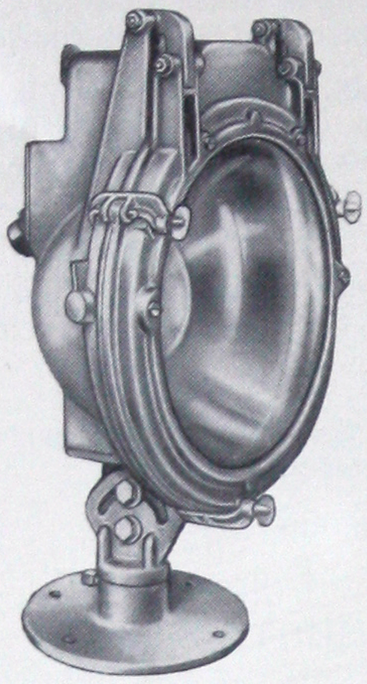
Floodlighted Parking Space

TYPES LCA AND LCE FLOODLIGHT PROJECTORS

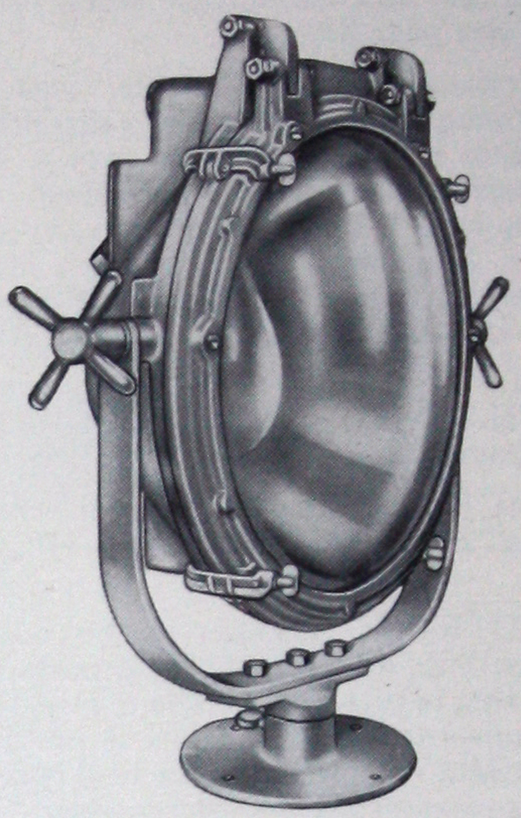
Medium and Long Range

12-Inch Projector, 200-Watt Lamp

16-Inch Projector, 500-Watt Lamp



Type LCA-12
Quadrant Mounting



Type LCE-16
Trunnion Mounting

Types LCA-12, LCE-12, LCA-16, and LCE-16 floodlight projectors are similar to types LCE-20 and LCE-24. They are designed to utilize the maximum amount of the light of the lamp. These projectors can be supplied in two styles of mounting and with either cast feraloy or cast silicon-aluminum alloy case, the choice of which is left to the customer. The cast silicon-aluminum alloy case is lighter and easier to handle. In most localities it will never require painting, and offers maximum resistance to corrosion.

DUST-TIGHT: The cases of these projectors are dust-tight and weatherproof. They are designed to radiate the heat of the lamp without ventilation. In a projector which is ventilated, the stream of air passing through carries with it all the dust and gas present in the atmosphere. The dust collects on the reflector, lamp, and lens and soon cuts the light output to a small fraction of its initial value. This dust is difficult to remove, and proper maintenance demands very frequent cleaning. Types LCA and LCE projectors stay clean on the inside, and an occasional wiping off of the outside of the lens will keep them operating at full efficiency.

HOODS: Cast feraloy or cast silicon-aluminum alloy hoods for reflecting the stray light above the beam down to the ground can be supplied with these projectors at the additional prices shown on page 38.

SELECTION OF LAMP: Most floodlighting installations do not require narrow beam spread or extremely high beam candle power. The general lighting service lamps should be used wherever possible on account of their higher efficiency, lower cost, and longer life. When a small area must be lighted from a distance, a narrow beam spread is necessary, and for this purpose types LCA and LCE projectors are listed with the lamp receptacle arranged for G-bulb concentrated filament lamps.

SELECTION OF REFLECTOR: The filaments of general lighting service PS-bulb lamps are relatively large and extended. When used with a smooth glass reflector, the beam from such a lamp is uneven, with bright streaks or filament images. Types LCA and LCE projectors for PS-bulb lamps are equipped with hammered glass reflectors. The hammered surface smooths out the beam and leaves it remarkably uniform. When concentrated filament G-bulb lamps are used, a smooth glass reflector is furnished.

TYPES LCA AND LCE FLOODLIGHT PROJECTORS

Medium and Long Range

12-Inch Projector, 200-Watt Lamp — **16-Inch Projector, 500-Watt Lamp**

HOUSING: Cast feraloy or cast silicon-aluminum alloy, non-ventilated, dust-tight, and weatherproof.

REFLECTOR: 12 or 16-inch crystal mirrored glass with hammered surface when used with standard lamp, and smooth surface when used with concentrated filament lamp. The smooth reflector will be furnished with the projector arranged for PS-bulb lamp without additional charge, if specified on the order. See page 38.

MOUNTINGS: Type LCA, quadrant. Type LCE, trunnion. A non-corrosive mounting can be furnished. Information on request.

FOCUSING MECHANISM: Hand operated by wing nut on rear of case. See pages 32 and 33.

LAMP RECEPTACLES: Porcelain medium screw base for 12-inch (Cat. No. HL9131); porcelain Mogul screw base for 16-inch (Cat. No. HL8751).

WIRING CONNECTIONS: A connection box with cover having threaded hub, and with binding posts for convenient connection is provided on the rear of the case. A CGB295 connector or stuffing box is provided for making a watertight connection to the lead wires. This connector has a rubber bushing which will clamp flexible cord from ½ to ⅝-inch diameter. CGB285 connector with lead sleeve for connecting to armored cable from $^{37}/_{64}$ to ⅝-inch diameter will be supplied without additional charge, if specified on the order.

DOOR FRAME: Cast feraloy or cast silicon-aluminum alloy, with two hinges having loose center section at top. Door and case are ground to a dust-tight fit.

DOOR CATCHES: Special "C" clamps.

HINGES: Two hinges having loose center section to allow even seating of the door.

LENS: Clear, plain, convex, Pyrex, heat-resisting. Spread or diffusing, convex, heat-resisting lens can be furnished without additional charge, if specified on the order. Colored, plain lens in red, amber, green or blue can also be furnished. See pages 34 and 35.

LAMPS: 12-Inch Projectors—200-watt, PS-30 bulb; 250-watt, G-30 bulb. 16-Inch Projectors—300 or 500-watt, PS bulb; 500-watt, G-40 bulb. See pages 36 and 37 for lamp data.

DIMENSIONS: See page 47 for type LCA, and page 48 for type LCE.

FINISH: Cast Feraloy Projectors, galvanized. Cast Silicon-Aluminum Projectors—case, natural aluminum; base and trunnion, galvanized.

NET WEIGHTS: Cast Feraloy Projectors—LCA-12, 51 lbs.; LCE-12, 53 lbs.; LCA-16, 71 lbs.; LCE-16, 73 lbs. Cast Silicon-Aluminum Projectors—LCA-12, 32 lbs.; LCE-12, 33 lbs.; LCA-16, 44 lbs.; LCE-16, 46 lbs.

SHIPPING WEIGHTS: Cast Feraloy Projectors—LCA-12, 94 lbs.; LCE-12, 96 lbs.; LCA-16, 128 lbs.; LCE-16, 130 lbs. Cast Silicon-Aluminum Projectors—LCA-12, 76 lbs.; LCE-12, 78 lbs.; LCA-16, 101 lbs.; LCE-16, 103 lbs.

Type	Reflector	Lamp		Mounting	Cast Feraloy Case		Cast Silicon-Aluminum Alloy Case	
		Watts	Bulb		Catalog Number	List Prices	Catalog Number	List Prices
LCA-12	Hammered Smooth	200 250	PS-30 G-30	Quadrant Quadrant	**40392** **40391**	On Request	**40395** **40394**	On Request
LCE-12	Hammered Smooth	200 250	PS-30 G-30	Trunnion Trunnion	**40383** **40382**		**40380** **40379**	
LCA-16	Hammered Smooth	300 or 500 500	PS G-40	Quadrant Quadrant	**40398** **40397**		**40401** **40400**	
LCE-16	Hammered Smooth	300 or 500 500	PS G-40	Trunnion Trunnion	**40389** **40388**		**40386** **40385**	

Catalog numbers do not include incandescent lamps.

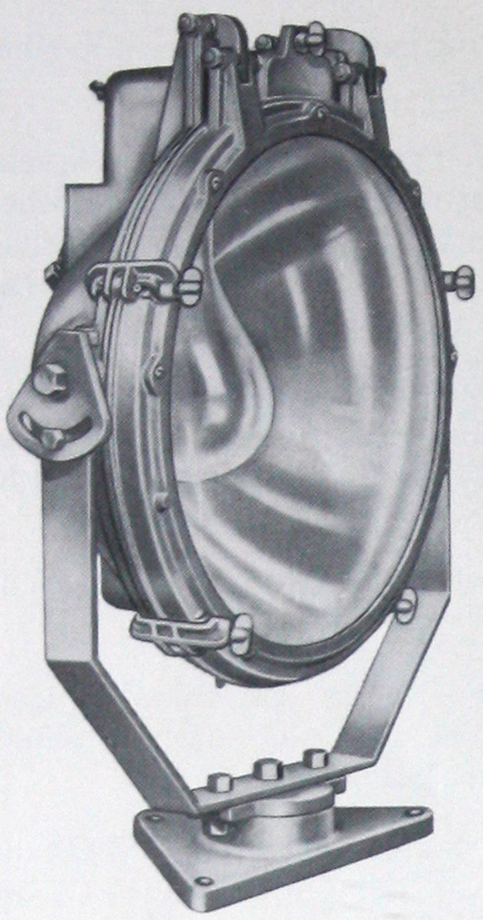
Focusing Directions, pages 32 and 33. **Hoods,** page 38. **Illumination Data,** pages 40 and 41. **Special Bases and Brackets,** pages 30 and 31.

TYPE LCE FLOODLIGHT PROJECTOR

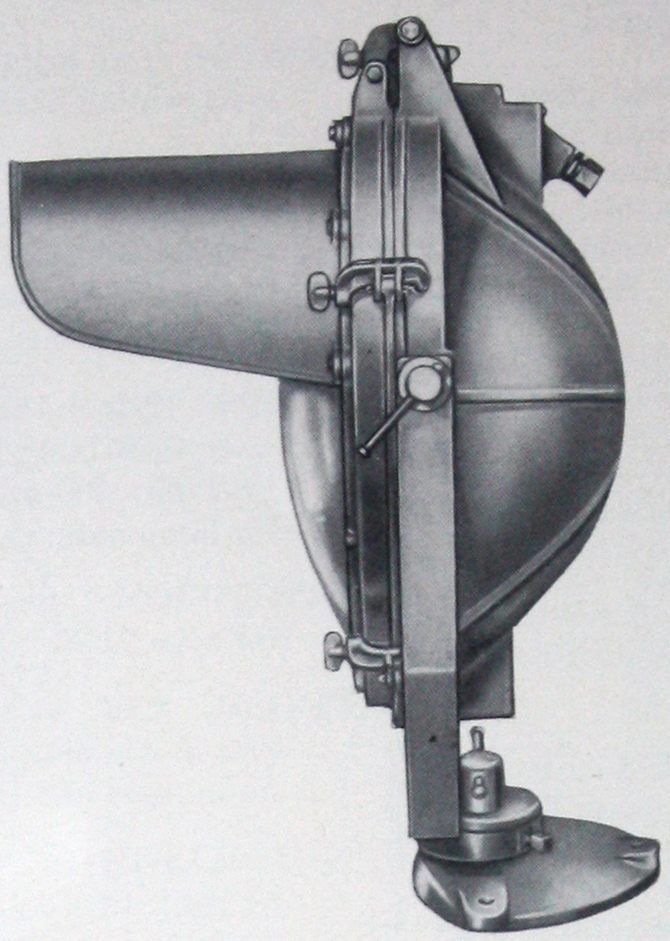
Medium and Long Range

20-Inch Projector, 1000-Watt Lamp

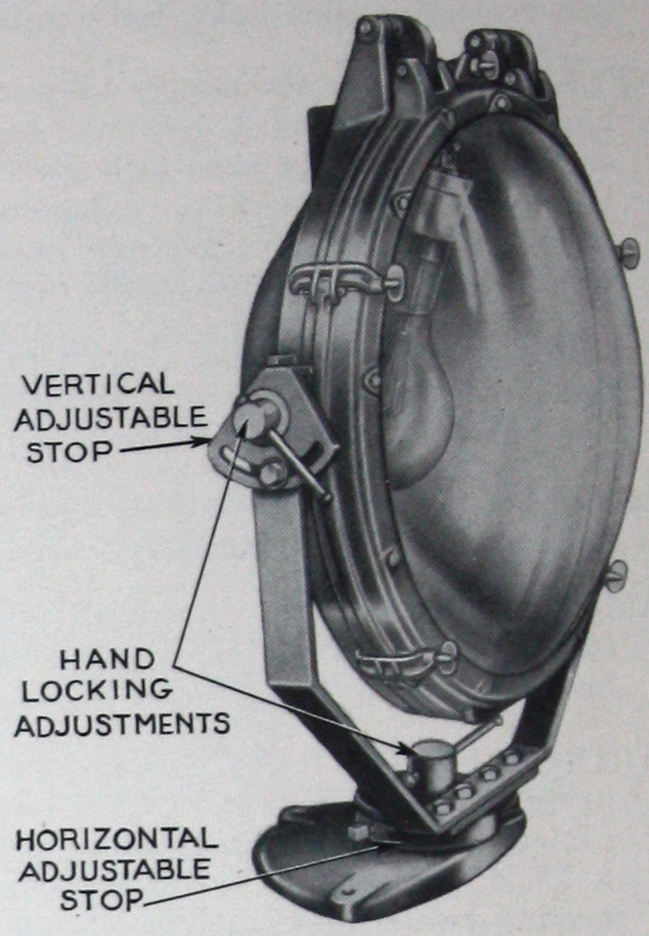
24-Inch Projector, 1500-Watt Lamp



Type LCE-20



Type LCE-24 with Hood



Type LCE-24 with
Horizontal Adjustable Stop and
Hand Locking Adjustments

EFFICIENCY: Types LCE-20 and LCE-24 floodlight projectors are designed to utilize the maximum amount of the light of the lamp. This increased efficiency allows large areas to be lighted with a smaller number of projectors, with a corresponding decrease in installation cost, lighting load, and maintenance costs.

DUST-TIGHT: The cases of the LCE-20 and LCE-24 floodlight projectors are dust-tight and weatherproof. The large radiating surface makes ventilation unnecessary. In a projector which is ventilated, the stream of air passing through carries with it all the dust and gas present in the atmosphere. The dust collects on the reflector, lamp, and lens and soon cuts the light output to a small fraction of its initial value. This dust is difficult to remove, and proper maintenance demands very frequent cleaning. Types LCE-20 and LCE-24 projectors stay clean on the inside, and an occasional wiping off of the outside of the lens will keep them operating at full efficiency.

CLEANING AND RELAMPING: Floodlight projectors are often mounted on the edge of tower platforms or roofs and unless special provision is made, it is practically impossible to clean and relamp the projector. To provide for this, types LCE-20 and LCE-24 projectors can be equipped with two very simple devices, by means of which the projector can be turned around or tipped completely over, or both, for convenience in relamping and cleaning, and then returned to the exact original setting without further adjustments. These devices are known as adjustable stops. The standard mounting eliminates the horizontal adjustable stop.

HOODS: When floodlight projectors are used for lighting railroad or factory yards, the area immediately beneath the projector between the tower and the place where the main beam strikes is often quite dark. Types LCE-20 and LCE-24 floodlight projectors can be supplied with a large cast silicon-aluminum alloy hood which reflects part of the stray light above the beam to the ground. The hood also prevents dust and soot from falling on the lens (see page 38).

SELECTION OF LAMP: The lamps most commonly used with types LCE-20 and LCE-24 projectors are the general lighting service lamps, 1000-watt, PS-52 for the LCE-20, and 1500-watt, PS-52 for the LCE-24. Most floodlighting installations do not call for extremely high beam candle power, but rather for an even distribution of light over a fairly large surface. The standard lamps should be used wherever possible on account of their higher efficiency, lower cost, and longer life. When a narrow beam of light of high beam candle power is required, it can be obtained with these same projectors by the use of concentrated filament lamps. These lamps are special and must be ordered from the lamp manufacturer. Concentrated filament lamps in the G bulb must be burned base down; if it is desired to use these lamps, types LCE-20 and LCE-24 projectors must be supplied with the lamp receptacle at the bottom of the case.

SELECTION OF REFLECTOR: Hammered glass reflectors can be supplied with types LCE-20 and LCE-24 projectors, and are recommended in conjunction with the plain lenses, wherever a narrow beam and high candle power are not required. The hammered surface eliminates the filament images and uneven appearance of the beam which are generally produced by the large filament of a general lighting service lamp, and leaves a beam which is slightly wider but much more uniform.

TYPE LCE FLOODLIGHT PROJECTOR

Medium and Long Range

20-Inch Projector, 1000-Watt Lamp — **24-Inch Projector, 1500-Watt Lamp**

HOUSING: Cast silicon-aluminum alloy, non-ventilated, dust-tight, and weatherproof.

REFLECTOR: Crystal mirrored Pyrex glass with either smooth or hammered surface. LCE-20, 19½″ in diameter; LCE-24, 24″ in diameter. See page 38.

MOUNTINGS: Steel trunnion on cast feraloy base. Standard mounting has the vertical adjustable stop and the floodlight is locked in position by means of a wrench. Hand screws for horizontal and vertical locking adjustments can be furnished; and a special base can be furnished with a horizontal adjustable stop which allows the floodlight to be turned around and returned to its exact original setting. See listing below. A non-corrosive mounting can be furnished. Information on request.

FOCUSING MECHANISM: Hand operated by wing nut on outside of case. See pages 32 and 33.

DAYLIGHT FOCUSING: Types LCE-20 and LCE-24 floodlights are equipped with a daylight focusing device, by means of which they can be focused in the daytime when the lamp is renewed. This is very convenient and eliminates considerable maintenance expense.

LAMP RECEPTACLE: Porcelain Mogul screw base (Cat. No. HL8751).

WIRING CONNECTIONS: A connection box with cover having threaded hub, and with binding posts for convenient connection is provided on the rear of the case. A CGB295 connector or stuffing box is provided for making a watertight connection to the lead wires. This connector has a rubber bushing which will clamp flexible cord from ½ to ⅝-inch diameter. CGB285 connector with lead sleeve for connecting to armored cable from $^{37}/_{64}$ to ⅝-inch diameter will be supplied without additional charge, if specified on the order.

DOOR FRAME: Cast silicon-aluminum alloy, with two hinges having loose center section at top. Door and case are ground to a dust-tight fit.

DOOR CATCHES: Special "C" clamps.

HINGES: Two hinges having loose center section to allow even seating of the door.

ADJUSTABLE STOPS: Two simple adjustable stops can be provided. The vertical stop allows the projector to be tipped completely over, and the horizontal stop allows the projector to be turned around for relamping and cleaning, and then returned to the exact original setting. Only the vertical stop is provided with the standard mounting. See listing below.

LENS: Clear, plain, convex, Pyrex, heat-resisting. Spread or diffusing convex, heat-resisting lens can be furnished without additional charge, if specified on the order. See pages 34 and 35.

LAMPS: LCE-20—750 or 1000-watt, PS-52 bulb; 1000-watt, G-40 bulb. LCE-24—750 to 1500-watt, PS-52 bulb; 1000 or 1500-watt, G-40 bulb. See pages 36 and 37 for lamp data.

LOUVERS: Circular louvers for eliminating all spill light, or straight louvers for eliminating spill light on any one side, can be provided. See page 38.

DIMENSIONS: See page 46.

FINISH: Case, natural aluminum; base and trunnion, galvanized.

NET WEIGHTS: LCE-20, 75 lbs.; LCE-24, 94 lbs.

SHIPPING WEIGHTS: LCE-20, 140 lbs.; LCE-24, 191 lbs.

Type	Reflector	Lamp		Catalog Number	List Prices
		Watts	Bulb		
LCE-20	Smooth	750 or 1000	PS-52	**40463**	On Request
	Smooth	1000	G-40	**40465**	
	Hammered	750 or 1000	PS-52	**40464**	
LCE-24	Smooth	750 to 1500	PS-52	**40466**	
	Smooth	1000 or 1500	G-40	**40468**	
	Hammered	750 to 1500	PS-52	**40467**	

Special Bases

Description	For	Catalog Number	List, each additional
Base complete with horizontal adjustable stop and hand locking adjustments	**LCE-20**	**HL9543**	**$40.00**
	LCE-24	**HL8619**	**40.00**

Catalog numbers do not include incandescent lamps.

Focusing Directions, pages 32 and 33. **Hoods,** page 38. **Illumination Data,** pages 40 and 41. **Special Bases and Bracket,** pages 30 and 31.

TYPE MSA-1 FLOODLIGHT

Short Range

Open Type

750 to 1500-Watt Lamps

Type MSA-1
Slip-Fitter Mounting

Type MSA-1
Bracket Mounting

Type MSA-1 is a large, open type, short range, wide angle floodlight, especially designed for the illumination of gasoline service stations, tennis courts, swimming pools, roofs of hangars at airports, and similar places. For certain classes of service where a short range floodlight is required, the results obtained are far superior to any other type unit.

The reflecting surface of an open type floodlight determines its efficiency: An aluminum paint surface has a reflection factor of from 60 to 65%; a porcelain enameled surface has a reflection factor of from 65 to 70%; but the paint that is used on the type MSA-1 floodlight, which is a development of the Crouse-Hinds Company, has a reflection factor of from 93 to 95%. It is known as "Floodlight White" paint. The finished surface is hard and will stand considerable wear, thus requiring less refinishing.

It is important that any floodlight used for this type of service have a rigid type of clamping or locking device to lock it in both the horizontal and vertical plane, and at the same time provide for an accurate setting of the unit to cover only the area desired. The type MSA-1 floodlight is furnished with positive clamps, the vertical adjustment being made by means of two swivel bolts which provide an accurate adjustment of the floodlight in the vertical plane, allowing the cutoff of the beam to be set at any point desired.

Football Field Lighting

Practice football fields can be lighted economically and efficiently with type MSA-1 floodlights mounted on a pole on each of the two long sides of the field. Stadiums or fields with large bleachers can be lighted to better advantage by using type LCE-24 floodlights listed on pages 12 and 13. A special bulletin on football field lighting gives complete details of both methods of installation, and will be sent upon request.

Gasoline Station Lighting

Gasoline service stations must be well lighted to attract approaching motorists. Type MSA-1 floodlights offer the most economical and effective means of lighting. They concentrate the light where it is needed, with even distribution and no glare.

The service station building should be lighted to from 10 to 15 foot candles average intensity, and the yard and driveways to from 2 to 4 foot candles. In terms of area, this means that one type MSA-1 floodlight can be used for every 2000 to 4000 square feet of yard and driveway with good results. However, in the case of a small station, at least two units must be used to eliminate shadows, although 750-watt lamps can be used if a lower intensity is found to be satisfactory, and in the case of very large stations, 1500-watt or 2000-watt lamps can be used instead of 1000-watt lamps.

A special bulletin on gasoline service station lighting will be sent upon request.

Tennis Court Lighting

Tennis can be played at night if the courts are lighted evenly and to a high intensity. It is also necessary that glare be entirely eliminated. These conditions can be met by the use of type MSA-1 floodlights. Six units with 1000-watt lamps are usually used. A special bulletin on tennis court lighting gives complete details, and will be sent upon request.

Swimming Pool Lighting

Swimming pools can be lighted either from overhead or under water. Type MSA-1 floodlights provide even illumination for overhead lighting with no glare. Both overhead and under water lighting installations are described in detail in a special bulletin on swimming pool lighting, which will be sent upon request.

TYPE MSA-1 FLOODLIGHT

Short Range

Open Type — **750 to 1500-Watt Lamps**

HOUSING: Cast silicon-aluminum alloy. The high heat conductivity of the aluminum housing results in cooler operation and elimination of heat trouble. The outside of the housing will not require painting under normal conditions.

REFLECTOR: The inside surface is finished with a special heat-resisting white paint of remarkably high reflecting power. See listing below.

MOUNTINGS: Cast feraloy slip fitter for standard 4-inch pipe, or steel bracket for attaching to wooden poles, buildings, or trees. The bracket is drilled for ⅝-inch lag screws. The slip fitter is provided with bushed openings so that the wires can be brought up through the pipe on which the floodlight is mounted and out through the slip fitter. With either mounting, the floodlight can be tipped at any required angle or rotated horizontally and locked in position.

LAMP RECEPTACLE: Porcelain Mogul screw base (Cat. No. HL2128).

LAMPS: 750, 1000, or 1500-watt, PS-52 bulb. See pages 36 and 37 for lamp data. Some applications of type MSA-1 floodlight require very high wattage, and for these cases 2000 or 2500-watt lamps in PS-52 bulb can be used. Information on these lamps can be obtained on request.

DIMENSIONS: See page 48.

FINISH: Case, natural aluminum; base, galvanized.

INSTALLATION: Type MSA-1 floodlights should be mounted on steel poles 15 to 25 feet high. The pole should be set in a substantial concrete foundation. If wooden poles or buildings are more convenient, the bracket shown on page 14 can be used to good advantage.

VOLTAGE: It is of the utmost importance that the rated lamp voltage correspond with the circuit voltage. If, for instance, a 115-volt lamp is used and the circuit at the floodlight only delivers 105 volts, the light output of the lamp is reduced approximately 26%. Lamps can be obtained which are rated at 105, 110, 115, 120, 125, and 130 volts. The safest way is to check the voltage at the floodlight terminals with a voltmeter at night, while the floodlight is in operation, and then lamps of the nearest voltage rating should be obtained.

NET WEIGHTS: With Slip-Fitter Base, 65 lbs. With Pole Bracket, 75 lbs.

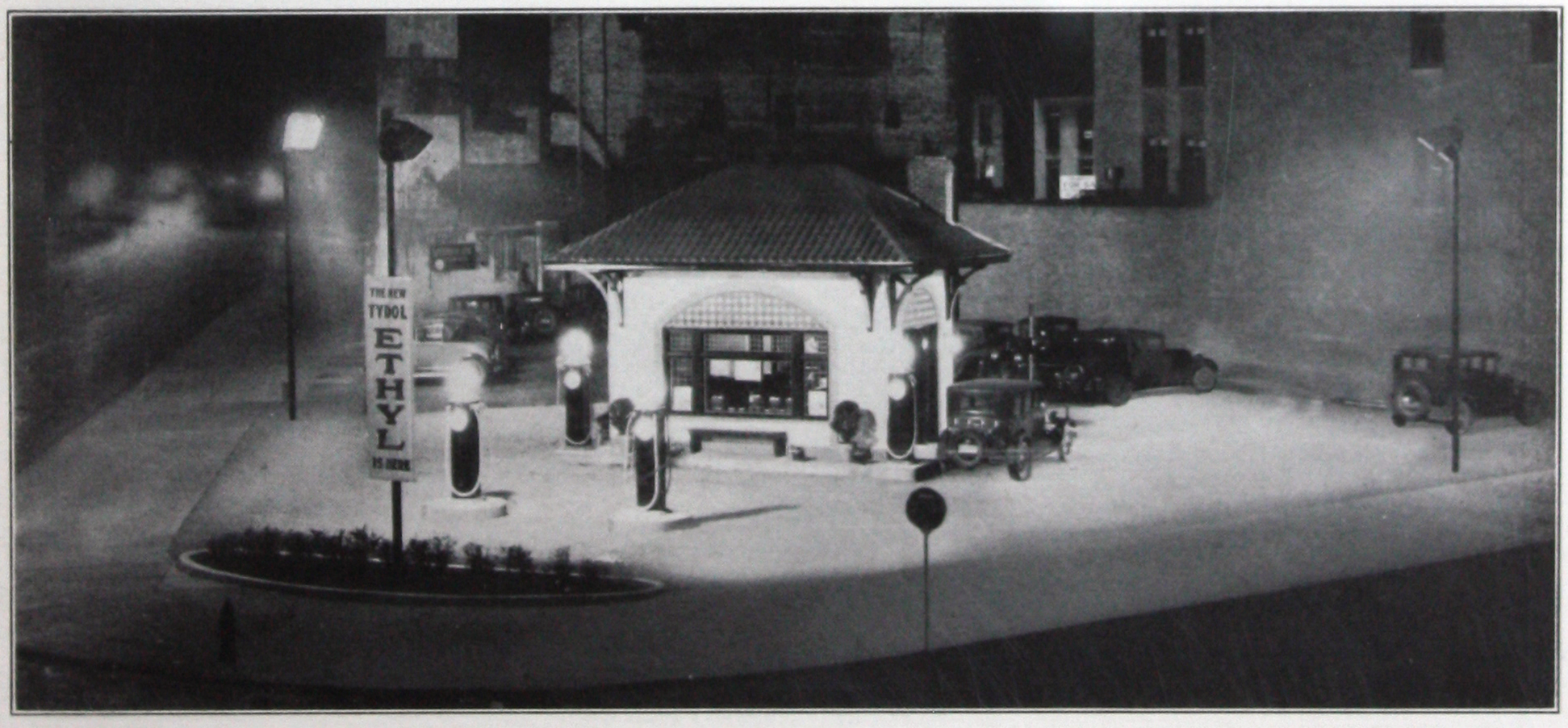
SHIPPING WEIGHTS: With Slip-Fitter Base, 125 lbs. With Pole Bracket, 145 lbs.

Type	Mounting	Catalog Number	List Prices
MSA-1	4-Inch Slip-Fitter Base Pole Bracket	**40778** **40790**	On Request

Paint

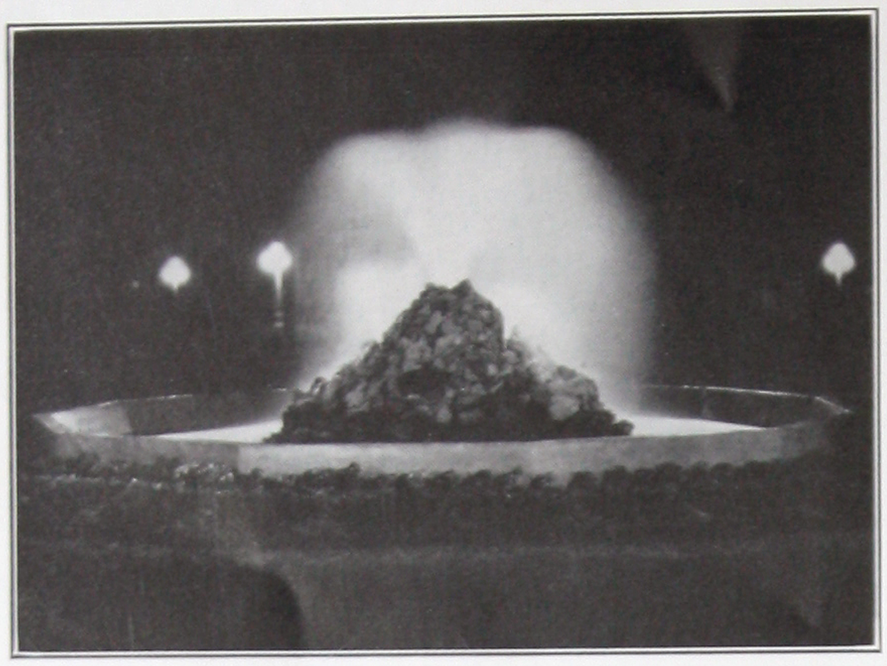
Description	Catalog Number	List Price per Quart
"Floodlight White" Paint	**HL2682**	**$3.50**

Catalog numbers do not include incandescent lamps. **Illumination Data,** pages 40 and 41. **Special Base and Bracket,** page 31.



Gas Station Illuminated

FOUNTAIN LIGHTING



Small Fountain
Lighted from Floodlights Installed Overhead

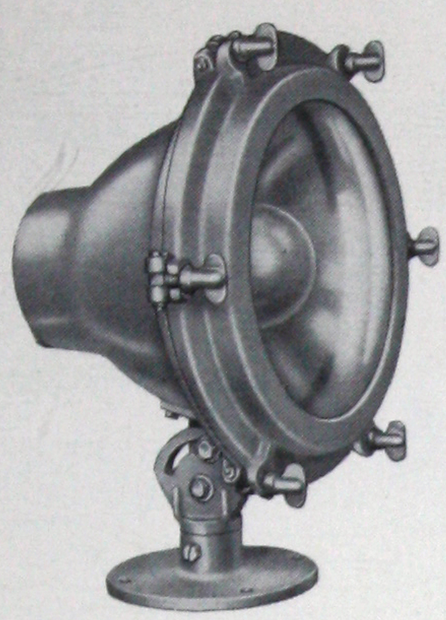
Thatcher Memorial Fountain
Denver, Colorado

Buckingham Memorial Fountain
Grant Park—Chicago

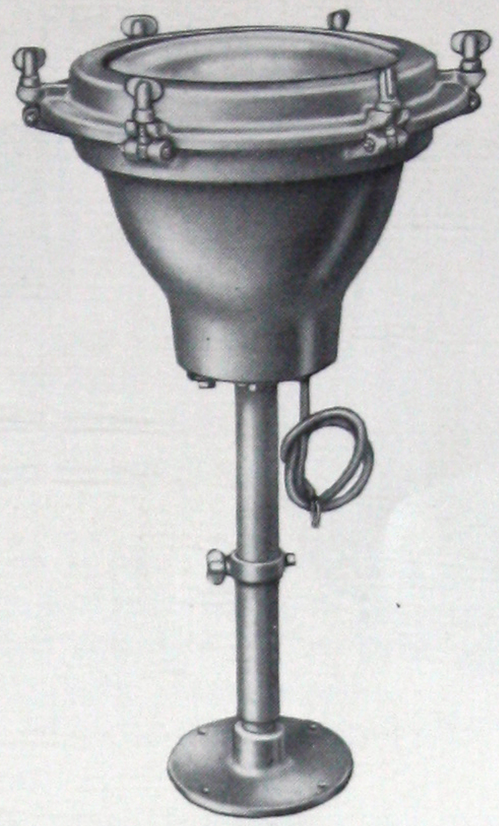
TYPES FDA AND FDV FLOODLIGHTS

For Fountain Use

12-Inch Reflector — **500-Watt Lamp**



Type FDA-12



Type FDV-12

Types FDA-12 and FDV-12 floodlights are designed especially for lighting fountains. The floodlight can be immersed in water, providing the lens is not covered by more than a few inches of water. Provision is made for raising the unit above the water for relamping. It is absolutely essential to provide a permanent drain for any floodlight which is under water or which has water falling on it. Types FDA-12 and FDV-12 are provided with a tapped hole for connection to flexible drain hose.

Electric fountains can be made as simple or as elaborate as desired, and the effects that it is possible to obtain are practically unlimited. Very small fountains which have no room for concealing floodlights under water can be lighted from overhead, with floodlights mounted in adjacent trees or on ornamental poles. The floodlighting can be supplemented with vaporproof lighting units of the V series, which are listed in Catalog 2200. They can be mounted under water, provided brass fittings and brass pipe are used, and can be placed so as to throw light of varying colors on the fountain structure.

It is advisable, whenever possible, to mount floodlights under water and as close to the nozzles as possible. The light is then projected upward and follows the stream of water.

Color effects are easy to obtain by means of colored heat-resisting lenses, and beautiful color cycles can be obtained by controlling the floodlights with motor driven dimmers. Crouse-Hinds engineers will design lighting systems for any type of fountain.

HOUSING: Cast silicon-aluminum alloy, watertight.

REFLECTOR: Crystal mirrored glass, 12-inch. See page 38.

MOUNTINGS: Type FDA-12, bronze quadrant. Type FDV-12, bronze pedestal which can be raised for relamping.

FOCUSING MECHANISM: Operated from inside of case. See pages 32 and 33.

LAMP RECEPTACLE: Porcelain Mogul screw base (Cat. No. HL7136).

WIRING CONNECTIONS: A watertight stuffing box is provided with rubber bushing to clamp cable from ½ to ⅝ inches in diameter.

DOOR FRAME: Cast silicon-aluminum, non-corroding alloy; gasketed, and held against case by six clamps.

LENS: Clear, plain, convex, Pyrex, heat-resisting. Clear or colored, spread or diffusing, heat-resisting lens can be furnished. See pages 34 and 35.

LAMPS: 500-watt, G-40 bulb. Projector can be arranged for use with 250-watt, G-30 bulb, if desired. See pages 36 and 37 for lamp data.

DRAIN: A ½-inch tapped hole is provided in the bottom of the case for connection to flexible hose.

DIMENSIONS: See page 47.

FINISH: Case, natural aluminum; base and pedestal, galvanized.

NET WEIGHTS: FDA-12, 30 lbs.; FDV-12, 35 lbs.

SHIPPING WEIGHTS: FDA-12, 60 lbs.; FDV-12, 65 lbs.

Type	Mounting	Catalog Number	List Prices
FDA-12	Quadrant	**40980**	On Request
FDV-12	Pedestal	**40515**	

Catalog numbers do not include incandescent lamps.
Focusing Directions, pages 32 and 33. **Illumination Data,** pages 40 and 41 (same as indicated for type LDE-12).

TYPES RM AND RMU FLOODLIGHTS

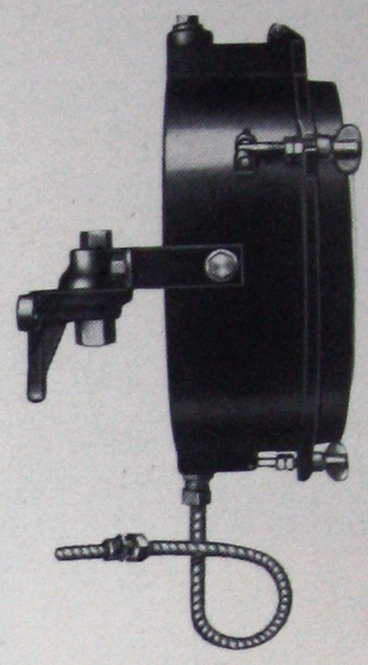
Short and Medium Range

10-Inch Reflector, 60 or 100-Watt Lamp

12-Inch Reflector, 150 or 200-Watt Lamp

Type RM-12

Type RMU-12 with Hood



Type RMU-12

Types RM and RMU floodlights meet lighting requirements in roundhouses, steel mills, on construction work, or wherever stationary, strong, gas and moistureproof illuminating units are desired. When mounted in roundhouses or other buildings where corroding vapors circulate, they offer full protection against the damage to which exposed lights and wiring systems in such locations are subjected.

HOUSING: Cast feraloy, gas and moistureproof.

REFLECTOR: Porcelain enameled steel or hammered glass, 10 or 12-inch. See page 38.

MOUNTINGS: Type RM fastens to flat surface by four lugs on back. Type RMU has a universal wall bracket.

FOCUSING MECHANISM: Lamp receptacle mounted on bracket, adjustable with screw driver.

LAMP RECEPTACLE: Porcelain medium screw base (Cat. No. HL674).

WIRING CONNECTION: ¾-inch threaded hubs at top and bottom. A pipe plug is furnished to close the unused hub.

WIRE: Type RM—two 3-foot leads No. 14 gauge stranded, weatherproof wire. Type RMU—30 inches of steel armored cable with two CGB285 connectors.

DOOR FRAME: Cast feraloy, gasketed to exclude gas, moisture, and dust from interior. Held in place by three swivel bolts with capped wing nuts (Cat. Nos.: 10-inch, HL5305; 12-inch, HL5317).

LENS: Clear, plain, convex, Pyrex, heat-resisting. Spread or diffusing, convex, heat-resisting lens can be furnished without additional charge, if specified on the order. See pages 34 and 35.

LAMPS: 10-Inch Floodlights, 60 or 100-watt, A bulb. 12-Inch Floodlights, 150 or 200-watt, PS bulb. See pages 36 and 37 for lamp data.

DIMENSIONS: See page 49.

FINISH: Baked black enamel.

NET WEIGHTS: RM-10, 20 lbs.; RM-12, 30 lbs.; RMU-10, 27 lbs.; RMU-12, 37.5 lbs.

SHIPPING WEIGHTS: RM-10, 38 lbs.; RM-12, 48 lbs.; RMU-10, 56 lbs.; RMU-12, 62 lbs.

Type	Reflector*	Lamp		Mounting	Catalog Number	List Prices
		Watts	Bulb			
RM-10	Porcelain Enameled Hammered Glass	60 or 100 60 or 100	A A	Rigid Rigid	**29788** **40407**	On Request
RM-12	Porcelain Enameled Hammered Glass	150 or 200 150 or 200	PS PS	Rigid Rigid	**26067** **40408**	
RMU-10	Porcelain Enameled Hammered Glass	60 or 100 60 or 100	A A	Wall Bracket Wall Bracket	**29793** **40409**	
RMU-12	Porcelain Enameled Hammered Glass	150 or 200 150 or 200	PS PS	Wall Bracket Wall Bracket	**29657** **40410**	

Catalog numbers do not include incandescent lamps.

*Reflector: Porcelain enameled steel reflector should be used for wide spread beam and very short range. The hammered glass reflector concentrates the light for projection to a greater distance.

Hoods, page 38. **Illumination Data,** pages 40 and 41.

TYPE RME FLOODLIGHT

Short and Medium Range

10-Inch Reflector, 60 or 100-Watt Lamp — **12-Inch Reflector, 150 or 200-Watt Lamp**

Type RME

Type RME is a rugged, cast feraloy floodlight for portable use. It is used where it is desired to "transport the light to the job". It is invaluable around railroad shops and yards where repairs must be made to heavy apparatus, and a strong light is necessary. It can be used to great advantage when working under cars and locomotives.

It is strong and rugged, yet it is light enough to be transported easily.

Since this floodlight is portable, it is generally used close to the work and for that reason a wide angle of light is desirable. This floodlight with porcelain enameled steel reflector is particularly recommended. However, in some cases, a long, narrow beam of light is desired and this may be obtained by using the hammered glass reflector.

Type RME floodlight has the same illumination characteristics as types RM and RMU. See page 18.

HOUSING: Cast feraloy, gas and moistureproof.

REFLECTOR: Porcelain enameled steel or hammered glass, 10 or 12-inch. See page 38.

MOUNTING: Trunnion.

FOCUSING MECHANISM: Lamp receptacle mounted on bracket, adjustable with screw driver.

LAMP RECEPTACLE: Porcelain medium screw base (Cat. No. HL674).

WIRE: Two 3-foot leads No. 14 gauge stranded, weatherproof wire.

DOOR FRAME: Cast feraloy, gasketed to exclude gas, moisture, and dust from interior. Held in place by three swivel bolts with capped wing nuts (Cat. Nos.: 10-inch, HL5305; 12-inch, HL5317).

LENS: Clear, plain, convex, Pyrex, heat-resisting. Spread or diffusing, convex, heat-resisting lens can be furnished without additional charge, if specified on the order. See pages 34 and 35.

LAMPS: 10-Inch Floodlights—60 or 100-watt, A bulb. 12-Inch Floodlights—150 or 200-watt, PS bulb. See pages 36 and 37 for lamp data.

DIMENSIONS: See page 48.

FINISH: Baked black enamel.

NET WEIGHTS: 10-Inch Floodlights—35 lbs. 12-Inch Floodlights—45 lbs.

SHIPPING WEIGHTS: 10-Inch Floodlights—53 lbs. 12-Inch Floodlights—63 lbs.

Type	Reflector*	Lamp		Mounting	Catalog Number	List Prices
		Watts	Bulb			
RME-10	Porcelain Enameled	60 or 100	A	Trunnion	**29803**	On Request
	Hammered Glass	60 or 100	A	Trunnion	**40411**	
RME-12	Porcelain Enameled	150 or 200	PS	Trunnion	**29480**	
	Hammered Glass	150 or 200	PS	Trunnion	**40412**	

Catalog numbers do not include incandescent lamps.

*Reflector: Porcelain enameled steel reflector should be used for wide spread beam and very short range. The hammered glass reflector concentrates the light for projection to a greater distance.

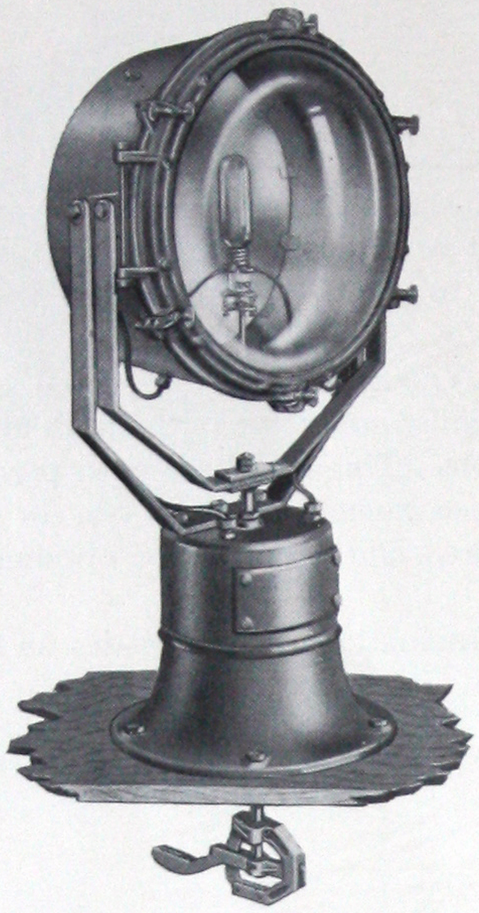
Special Bases and Brackets, pages 30 and 31.

TYPES DCE, DCX, AND DCY INCANDESCENT SEARCHLIGHTS

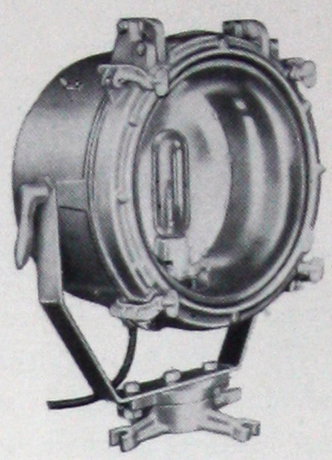
Long Range

14-Inch Reflector, 250 to 1000-Watt Lamps

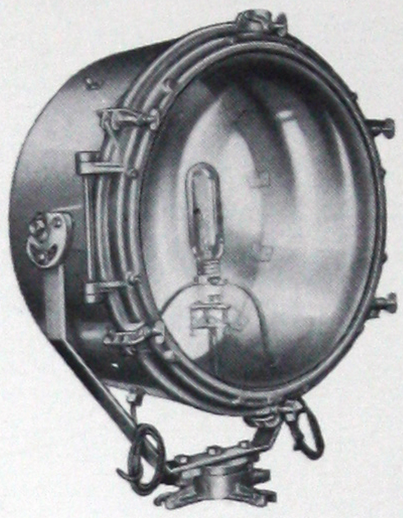
24-Inch Reflector, 1000 or 1500-Watt Lamp



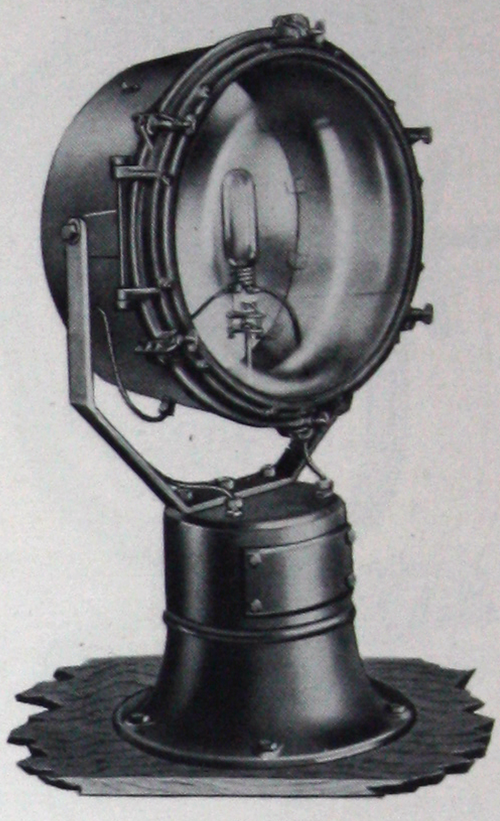
Type DCX-24



Type DCE-14



Type DCE-24



Type DCY-24

These incandescent searchlights are designed for long range spotlight or searchlight use. Types DCE-14 and DCE-24 searchlights are for use as fixed spotlights for lighting small areas at a distance. Types DCY-14 and DCY-24 are hand-controlled searchlights for spotting distant objects, the searchlights being controlled by a handle on the back of the housing. Types DCX-14 and DCX-24 searchlights are designed to be mounted on the roof of a pilot house or watch tower, and to be controlled from below by means of levers.

SELECTION OF LAMP: The type of lamp to be used with a spotlight or searchlight depends largely on the service for which it is intended. If it is used as a fixed spotlight and is in operation continuously for several hours every night, a lamp designed for "Floodlight Service", having an average rated life of 800 hours, is recommended in order to keep the cost of lamp renewals from becoming excessive. When used as a searchlight, where the life of the lamp can be sacrificed in order to secure the highest possible candle power from the searchlight, a short life lamp designed for searchlight service should be used. For maximum results the 900-watt, T20-bulb, 30-volt projection lamp is recommended. The high operating temperature of this lamp makes it ideal for this service and the results obtained more than compensate for the small extra expense of a transformer to obtain the 30 volts, and for the short life of the lamp.

PREFOCUSED BASE LAMPS: Some of the lamps listed for these searchlights can be obtained with prefocused bases as noted on page 21. The searchlights are also listed with prefocused base lamp receptacles and when so equipped are focused at the factory and never require refocusing in service. This insures maximum results from the searchlight at all times and eliminates the necessity of focusing every time a lamp is renewed.

AUTOMATIC LAMP-CHANGERS: Automatic lamp-changers can be furnished with these searchlights for use with T20-bulb lamps only. The prefocused base receptacles are used on the lamp-changer. Two lamps are mounted side by side on the lamp-changer and when the operating lamp burns out, the spare lamp is automatically shifted to the focal point of the reflector and connected to the circuit. At the same time, a red light on top of the unit lights as a warning that the operating lamp should be replaced and the lamp-changer reset at the earliest opportunity. An indicating circuit can also be supplied with the searchlight to control a remote indicating light which lights when the operating lamp fails. This should be used with type DCX-24. The automatic lamp-changer is a very valuable addition to any incandescent searchlight, as it insures the searchlight being in operation at all times. A searchlight without a lamp-changer may fail just when it is most needed.

TELL-TALE LAMP AND "LOCK-IN" RELAY: Type DCX-24 searchlight, when furnished with an automatic lamp-changer, can be wired for use with a remote indicating light. This arrangement will be furnished at an additional list price which will be given on request. The remote indicating light consists of a cast feraloy box with fuse block, indicating lamp, red bullseye, and a lock-in relay. When the operating lamp fails the relay closes and lights the indicating lamp. The relay remains closed and the indicating lamp burns until the relay is tripped by hand.

TYPES DCE, DCX, AND DCY INCANDESCENT SEARCHLIGHTS

Long Range

14-Inch Reflector, 250 to 1000-Watt Lamps — **24-Inch Reflector, 1000 or 1500-Watt Lamp**

HOUSING: Cast silicon-aluminum alloy, dust-tight, and weatherproof.

REFLECTOR: Commercial precision silvered glass mirrors, 14 or 24-inch. See page 38.

MOUNTINGS: Types DCE-14 and DCE-24, steel trunnion on cast feraloy base. Types DCX-14 and DCX-24, pedestal mounting with ball bearings, slip rings, and lever control. Types DCY-14 and DCY-24, pedestal mounting with ball bearings and slip rings to carry current to lamp.

FOCUSING MECHANISM: Furnished only with searchlights with screw base receptacles. Searchlights furnished with prefocused base lamp receptacles never require refocusing. See pages 32 and 33.

LAMP RECEPTACLE: Medium or Mogul screw base, or medium or Mogul prefocused base, as specified. See listing below.

WIRING CONNECTIONS: Types DCE-14 and DCE-24, two leads stranded, weatherproof wire. Types DCX-14, DCX-24, DCY-14, and DCY-24 are furnished with slip rings in the pedestal.

DOOR FRAME: Cast silicon-aluminum alloy, hinged to housing and fastened with special "C" clamps.

LENS: Clear, plain, convex, Pyrex, heat-resisting. See pages 34 and 35.

LAMPS: See schedule below.

LOUVERS: Circular louvers for eliminating all spill light can be provided. See page 38.

DIMENSIONS: See page 48 for type DCE, and page 46 for types DCX and DCY.

FINISH: Case, natural aluminum; base, trunnion, and pedestal, galvanized.

NET WEIGHTS: DCE-14, 52 lbs.; DCE-24, 111 lbs.; DCX-14, 95 lbs.; DCX-24, 220 lbs.; DCY-14, 82 lbs.; DCY-24, 205 lbs.

SHIPPING WEIGHTS: DCE-14, 100 lbs.; DCE-24, 200 lbs.; DCX-14, 165 lbs.; DCX-24, 345 lbs.; DCY-14, 155 lbs.; DCY-24, 325 lbs.

Type	Mounting	Lamp Receptacle*	Automatic Lamp-Changer	Catalog Number	List Prices
DCE-14	Trunnion	Medium Screw	Without	**41063**	
	Trunnion	Medium Prefocus	Without	**41064**	
	Trunnion	Mogul Screw	Without	**41065**	
	Trunnion	Mogul Prefocus	Without	**41066**	
DCE-24	Trunnion	Mogul Screw	Without	**40789**	
	Trunnion	Mogul Prefocus	Without	**41067**	
	Trunnion	Mogul Prefocus	With	**41068**	
DCX-14	Pilot House Control	Mogul Prefocus	Without	**41069**	On Request
DCX-24	Pilot House Control	Mogul Prefocus	Without	**41070**	
	Pilot House Control	Mogul Prefocus	With	**41071**	
DCY-14	Pedestal	Mogul Prefocus	Without	**41072**	
DCY-24	Pedestal	Mogul Prefocus	Without	**41073**	
	Pedestal	Mogul Prefocus	With	**41074**	

Lamps

Watts	Bulb	Volts	Life in Hours	Service	Base	Watts	Bulb	Volts	Life in Hours	Service	Base
For Continuous Operation						**Special Searchlight Lamps**					
14-Inch Searchlight											
250	G-30	115	800	Floodlight	Medium Screw	500	T-20	115	50	Projection	Medium Prefocus
500	G-40	115	800	Floodlight	Mogul Screw	1000	T-20	115	50	Projection	Mogul Prefocus
1000	G-40	115	800	Floodlight	Mogul Screw	900	T-20	30	50	Projection	Mogul Prefocus
1000	T-20	115	500	Air Beacon	Mogul Prefocus						
24-Inch Searchlight											
1000	T-20	115	500	Air Beacon	Mogul Prefocus	1000	T-20	115	50	Projection	Mogul Prefocus
1500	G-40	115	800	Floodlight	Mogul Screw	900	T-20	30	50	Projection	Mogul Prefocus

Tell-Tale Lamp and "Lock-In" Relay

Description	Catalog No.	List Prices
Tell-Tale Lamp and "Lock-In" Relay Complete for 115-Volt, 60-Cycle Circuit	**40949**	On Request
Tell-Tale Lamp and "Lock-In" Relay Complete for 30-Volt, 60-Cycle Circuit	**40952**	
Tell-Tale Lamp and "Lock-In" Relay Complete for 115-Volt, D. C. Circuit	**40953**	

Catalog numbers do not include incandescent lamps.

*Units listed with prefocused base receptacles will be furnished with screw base receptacles without additional charge, if specified on the order. **Focusing Directions,** pages 32 and 33.

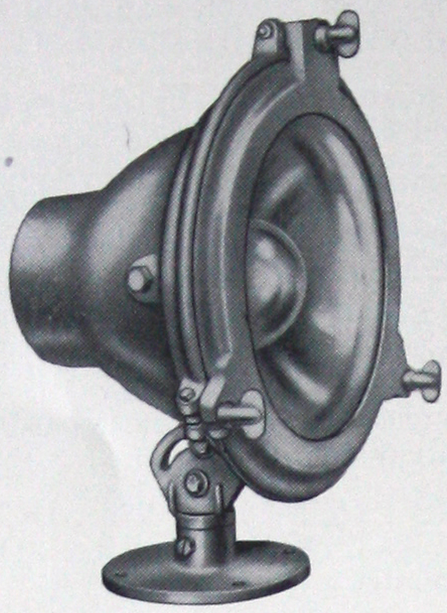
Note: Length of standard control stem of types DCX-14 and DCX-24 below base, is 5 inches.

TYPES LDA AND LDE FLOODLIGHT PROJECTORS

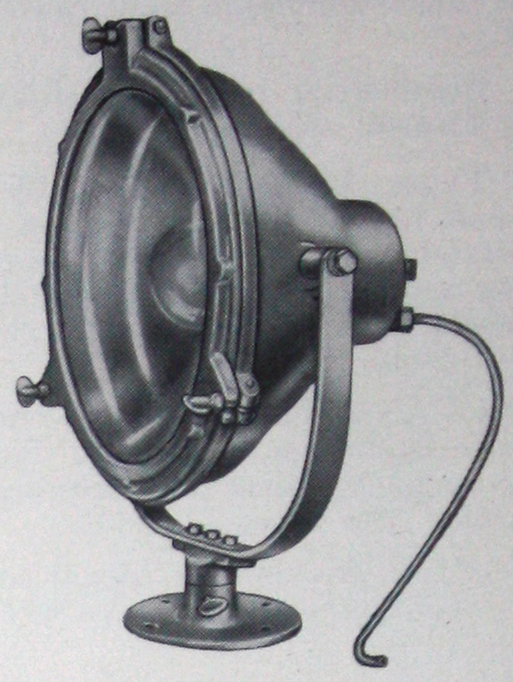
Long Range

12-Inch Reflector, 250-Watt, G-30 Lamp

16-Inch Reflector, 500-Watt, G-40 Lamp



Type LDA-12
Quadrant Mounting



Type LDE-16
Trunnion Mounting

Types LDA and LDE floodlight projectors are designed for long range, narrow beam work. The optical system is the same as supplied with types SDA and SDE projectors which were listed for many years, but are now superseded by types LDA and LDE, which have cast housings of more rugged construction. These floodlight projectors have very accurate gro'ınd and polished silvered glass reflectors. They project narrow beams of light of high candle power and can be used as small searchlights or spotlights, or at any place where it is necessary to project light to a distance and confine it to a small area.

Note: On account of the construction of the incandescent lamps, **these projectors must not be tipped down more than 45 degrees below the horizontal.** See page 36.

HOUSING: Cast feraloy or cast silicon-aluminum alloy, dust-tight, and weatherproof.

REFLECTOR: Crystal mirrored glass, 12 or 16-inch. See page 38.

MOUNTINGS: Type LDA, quadrant. Type LDE, trunnion.

FOCUSING MECHANISM: Hand operated by a knurled thumb wheel on the back of case. See pages 32 and 33.

LAMP RECEPTACLES: Porcelain medium screw base for 12-inch (Cat. No. HL6019); porcelain Mogul screw base for 16-inch (Cat. No. HL7136).

WIRING CONNECTIONS: 2 feet of weatherproof cable which enters housing through a watertight stuffing box.

DOOR FRAME: Cast feraloy or cast silicon-aluminum alloy, clamped to case with capped wing nuts. A heavy gasket makes a weatherproof joint.

LENS: Clear, plain, convex, Pyrex, heat-resisting. Clear or colored, spread, convex, heat-resisting lens can be furnished if specified on the order. See pages 34 and 35.

LAMPS: 12-Inch Projectors—250-watt, G-30 bulb. 16-Inch Projectors—500-watt, G-40 bulb. See pages 36 and 37 for lamp data.

DIMENSIONS: See page 47 for type LDA, and page 48 for type LDE.

FINISH: Cast Feraloy Projectors, galvanized. Cast Silicon-Aluminum Projectors—case, natural aluminum; base and trunnion, galvanized.

NET WEIGHTS: Cast Feraloy Projectors—LDA-12, 50 lbs.; LDE-12, 52 lbs.; LDA-16, 79 lbs.; LDE-16, 87 lbs. Cast Silicon-Aluminum Projectors—LDA-12, 30 lbs.; LDE-12, 32 lbs.; LDA-16, 43 lbs.; LDE-16, 51 lbs.

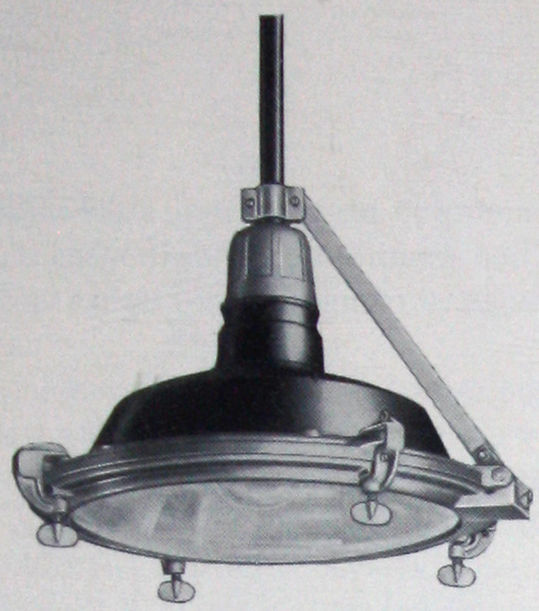
SHIPPING WEIGHTS: Cast Feraloy Projectors—LDA-12, 75 lbs.; LDE-12, 77 lbs.; LDA-16, 104 lbs.; LDE-16, 112 lbs. Cast Silicon-Aluminum Projectors—LDA-12, 55 lbs.; LDE-12, 58 lbs.; LDA-16, 68 lbs.; LDE-16, 76 lbs.

Type	Lamp		Mounting	Cast Feraloy Case		Cast Silicon-Aluminum Alloy Case	
	Watts	Bulb		Cat. No.	List Prices	Cat. No.	List Prices
LDA-12	250	G-30	Quadrant	**40509**	On Request	**40510**	On Request
LDE-12	250	G-30	Trunnion	**40218**		**40222**	
LDA-16	500	G-40	Quadrant	**40511**		**40512**	
LDE-16	500	G-40	Trunnion	**40210**		**40214**	

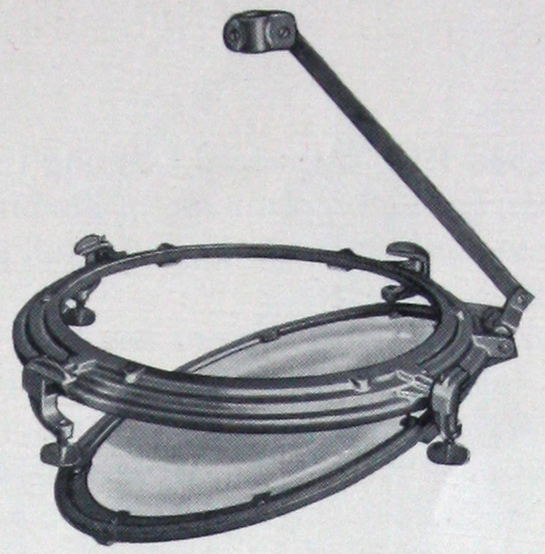
Catalog numbers do not include incandescent lamps.
Focusing Directions, pages 32 and 33. **Illumination Data,** pages 40 and 41. **Special Bases and Brackets,** pages 30 and 31.

TYPE RAS INDUSTRIAL LIGHTING UNIT

12-Inch Reflector, 100-Watt Lamp **14-Inch Reflector, 200-Watt Lamp** **16-Inch Reflector, 500-Watt Lamp**



Type RAS-16



Enclosing Door and Frame for Type RAS-16

Type RAS Industrial Lighting Unit is supplied in three sizes: 12, 14, and 16-inch. The reflectors are standard RLM reflectors. The enclosing doors and frames are listed separately in order that the enclosed feature may be applied to existing open reflector installations of 12, 14, and 16-inch reflectors.

HOUSING: Standard RLM reflectors, enameled on inner and outer surfaces, with rigid cast frame clamped with gaskets to the bead of the reflector, with sealing compound around top gasket. Type RAS-16 has a special casting on the top which allows 300 or 500-watt lamps to be used.

REFLECTOR: Porcelain enameled steel, 12, 14, or 16-inch.

MOUNTING: Suspension.

LAMP RECEPTACLES: Medium screw base for RAS-12 and RAS-14; Mogul screw base for RAS-16.

DOOR FRAME: Cast feraloy for RAS-12; cast silicon-aluminum alloy for RAS-14 and RAS-16. Door frame is clamped against a heavy gasket by three clamps on RAS-12 and RAS-14, and four clamps on RAS-16.

LENS: Clear, plain, convex, Pyrex, heat-resisting. Diffusing, convex, heat-resisting lens can be furnished without additional charge, if specified on the order. See pages 34 and 35.

LAMPS: 12-Inch Units—100 to 150-watt, PS or A bulb. 14-Inch Units—200-watt, PS bulb. 16-Inch Units—300 or 500-watt, PS bulb. See pages 36 and 37 for lamp data.

DIMENSIONS: See page 49.

FINISH: Door and frame, RAS-12, galvanized; RAS-14 and RAS-16, natural aluminum.

NET WEIGHTS: Complete Units—RAS-12, 15 lbs.; RAS-14, 17 lbs.; RAS-16, 21 lbs. Doors and Frames Only—RAS-12, 13 lbs.; RAS-14, 15 lbs.; RAS-16, 16 lbs.

SHIPPING WEIGHTS: Complete Units—RAS-12, 35 lbs.; RAS-14, 42 lbs.; RAS-16, 48 lbs. Doors and Frames Only—RAS-12, 33 lbs.; RAS-14, 36 lbs.; RAS-16, 42 lbs.

Complete Units

Type	Mounting	Catalog Number	List Prices
RAS-12	Suspension	**29808**	On Request
RAS-14	Suspension	**40402**	
RAS-16	Suspension	**40405**	

Doors and Frames Only

Description	Catalog Number	List Prices
Door and Frame for RAS-12	**29809**	On Request
Door and Frame for RAS-14	**40403**	
Door and Frame for RAS-16	**40406**	

Catalog numbers do not include incandescent lamps.
Illumination Data, pages 44 and 45.

TYPES RLS AND RLU INDUSTRIAL LIGHTING UNITS

12-Inch Reflector, 100 to 200-Watt Lamps

16-Inch Reflector, 300 or 500-Watt Lamp

Types RLS and RLU Industrial Lighting Units meet lighting requirements in roundhouses, steel mills, or wherever a strong, stationary, gas and moistureproof illuminating unit is desired. When mounted in roundhouses or other buildings where corroding vapors circulate, they offer full protection against the damage to which exposed lights and wiring systems in such locations are subjected.

The cast feraloy suspension type has been so designed that it can be guyed if it seems advisable. To install the suspension type, take off the cover by removing the two cap screws, thereby giving access to the binding posts to which the circuit wires are to be attached. The universal wall bracket type is a design that enables the unit to be placed where most convenient and the light then to be directed where desired. By loosening the two cap screws that hold the supporting arm to the case, the unit can be tipped outward 15 degrees from the mounting surface. Tightening these cap screws locks the unit in the desired position. By loosening the cap screw that fastens the swivel bracket to the wall bracket, the unit may be moved 15 degrees to the right or left. Tightening this cap screw locks it in the desired position.

The case is gasproof, but in case the lens is accidentally broken no gas can get into the conduit system, because the cover compartment itself is gasproof.

The unit is so designed that the lamp does not become excessively heated, and the circulation of air around the lamp and reflector is uniformly maintained. Asbestos gaskets are used throughout, as they are not affected by gases.

The use of a skeleton socket has a tendency to keep the base of the lamp cooler on account of the freer circulation of air.

Types RLS and RLU units have the same light distribution as type RAS, listed on page 23.

Industrial Lighting Unit Installation

TYPES RLS AND RLU INDUSTRIAL LIGHTING UNITS

12-Inch Reflector, 100 to 200-Watt Lamps

16-Inch Reflector, 300 or 500-Watt Lamp

Type RLS
Suspension Mounting

Type RLU
Universal Wall Bracket

HOUSING: Cast feraloy or cast silicon-aluminum alloy, gas and moistureproof.

REFLECTOR: Porcelain enameled steel, 12 or 16-inch. See page 38.

MOUNTINGS: Type RLS, suspension. Type RLU, universal wall bracket.

LAMP RECEPTACLES: Medium screw base for 12-inch (Cat. No. HL8079); skeleton Mogul screw base for 16-inch (Cat. No. HL7012).

WIRING CONNECTIONS: Type RLS, direct to conduit by ¾-inch pipe. Type RLU connects to conduit by a flexible, steel armored cable, and two CGB285 connectors, making a gas and vaporproof connection.

DOOR FRAME: Cast feraloy or cast silicon-aluminum alloy, held against a heavy asbestos gasket by three swivel bolts and capped wing nuts. Door is hinged on one side (Cat. Nos.: 12-inch—cast feraloy, HL8070; cast silicon-aluminum alloy, HL8071. 16-inch—cast feraloy, HL7740; cast silicon-aluminum alloy, HL7959).

LENS: Clear, plain, convex, Pyrex, heat-resisting. Diffusing, convex, heat-resisting lens can be furnished without additional charge, if specified on the order. See pages 34 and 35.

LAMPS: 12-Inch Units—100 to 200-watt, PS or A bulb. 16-Inch Units—300 or 500-watt, PS bulb. See pages 36 and 37 for lamp data.

DIMENSIONS: See page 49.

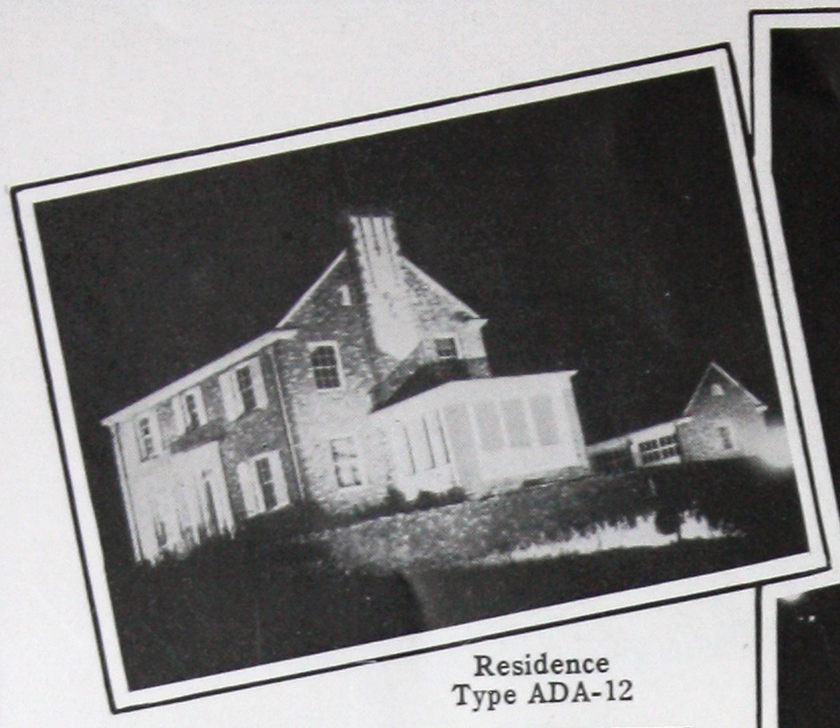
FINISH: Cast Feraloy Units, black enamel. Cast Silicon-Aluminum Units, natural aluminum.

NET WEIGHTS: Cast Feraloy Units—RLS-12, 40 lbs.; RLS-16, 64 lbs.; RLU-12, 47 lbs.; RLU-16, 73 lbs. Cast Silicon-Aluminum Units—RLS-12, 20 lbs.; RLS-16, 32 lbs.; RLU-12, 28 lbs.; RLU-16, 42 lbs.

SHIPPING WEIGHTS: Cast Feraloy Units—RLS-12, 65 lbs.; RLS-16, 104 lbs.; RLU-12, 72 lbs.; RLU-16, 113 lbs. Cast Silicon-Aluminum Units—RLS-12, 44 lbs.; RLS-16, 72 lbs.; RLU-12, 53 lbs.; RLU-16, 82 lbs.

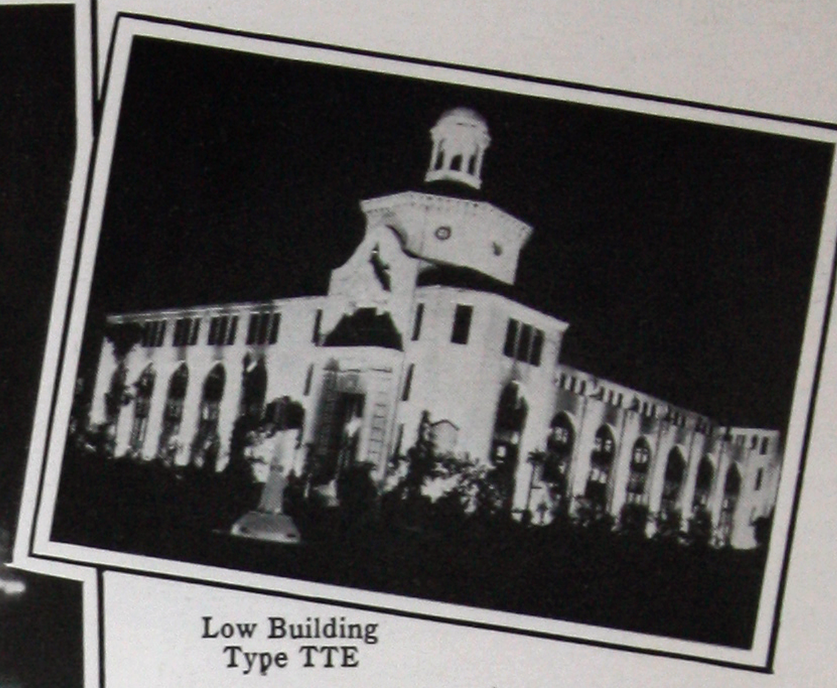
Type	Lamp		Mounting	Cast Feraloy Case		Cast Silicon-Aluminum Alloy Case	
	Watts	Bulb		Catalog Number	List Prices	Catalog Number	List Prices
RLS-12	100	PS or A	Suspension	29769	On Request	29775	On Request
	150	PS-25	Suspension	29768		29774	
	200	PS-30	Suspension	29767		29773	
RLU-12	100	PS or A	Wall Bracket	29772		29778	
	150	PS-25	Wall Bracket	29771		29777	
	200	PS-30	Wall Bracket	29770		29776	
RLS-16	300 or 500	PS	Suspension	29726		29732	
RLU-16	300 or 500	PS	Wall Bracket	29729		29735	

Catalog numbers do not include incandescent lamps.



Residence
Type ADA-12

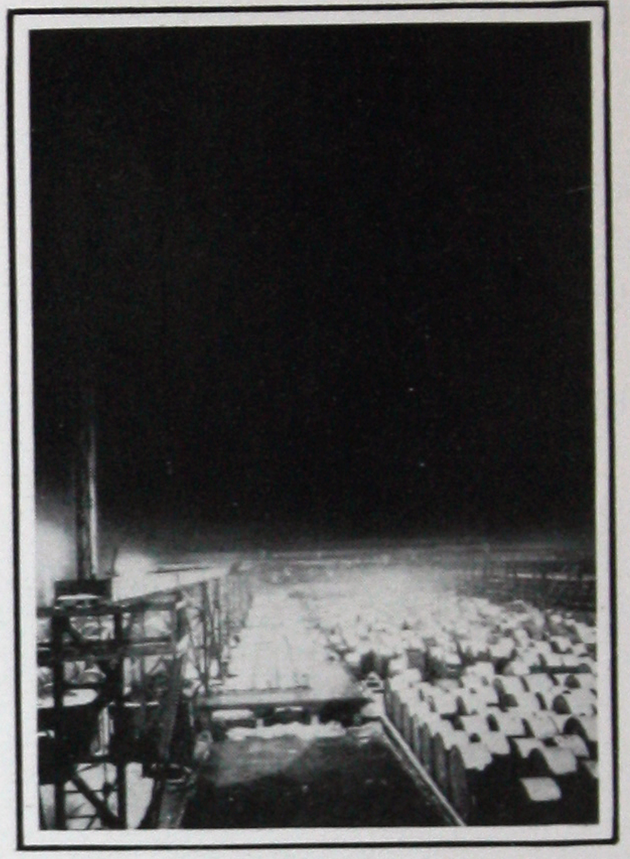
Office Building



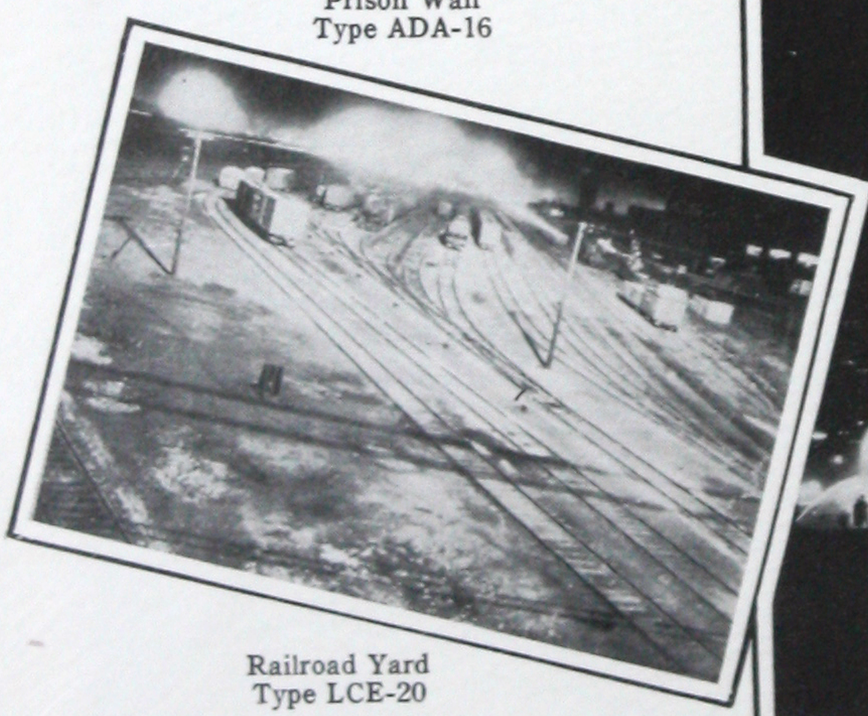
Low Building
Type TTE

Prison Wall
Type ADA-16

A Complete Line of Floodlights

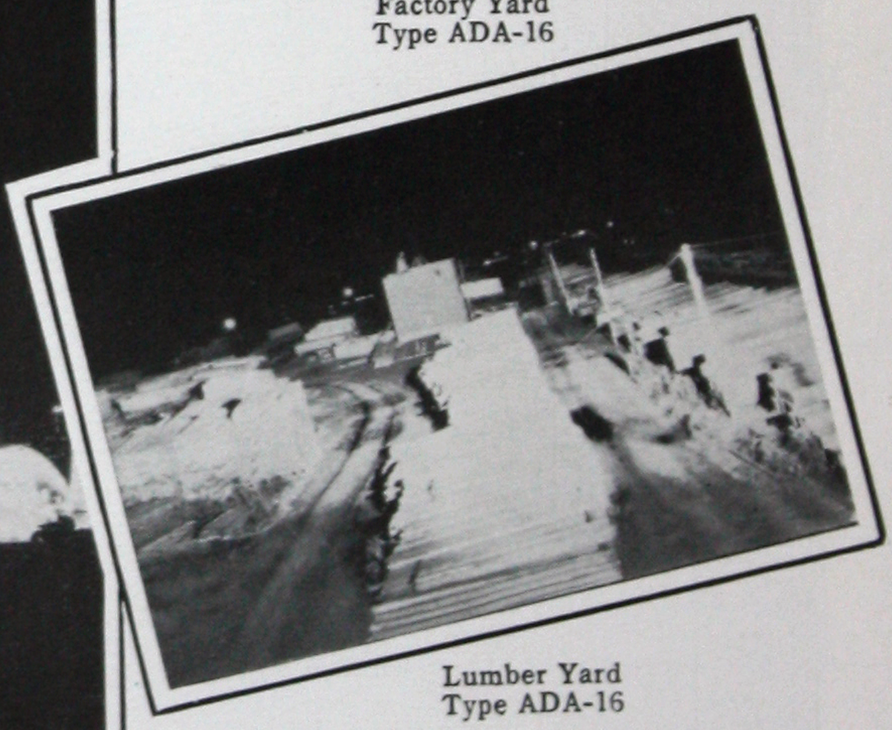


Factory Yard
Type ADA-16

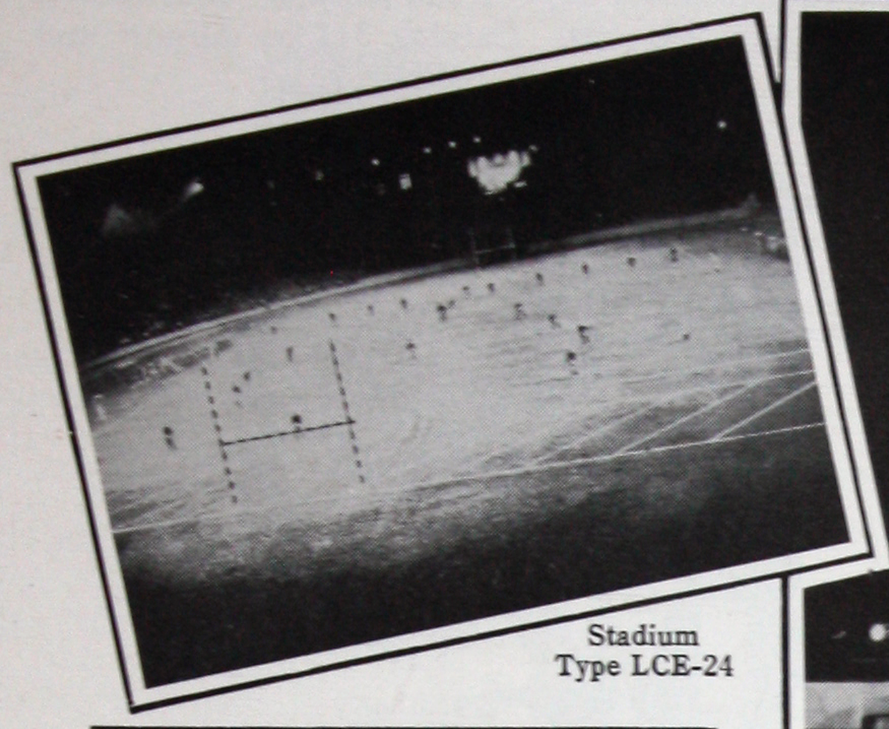


Railroad Yard
Type LCE-20

Fountain
Type FDV-12

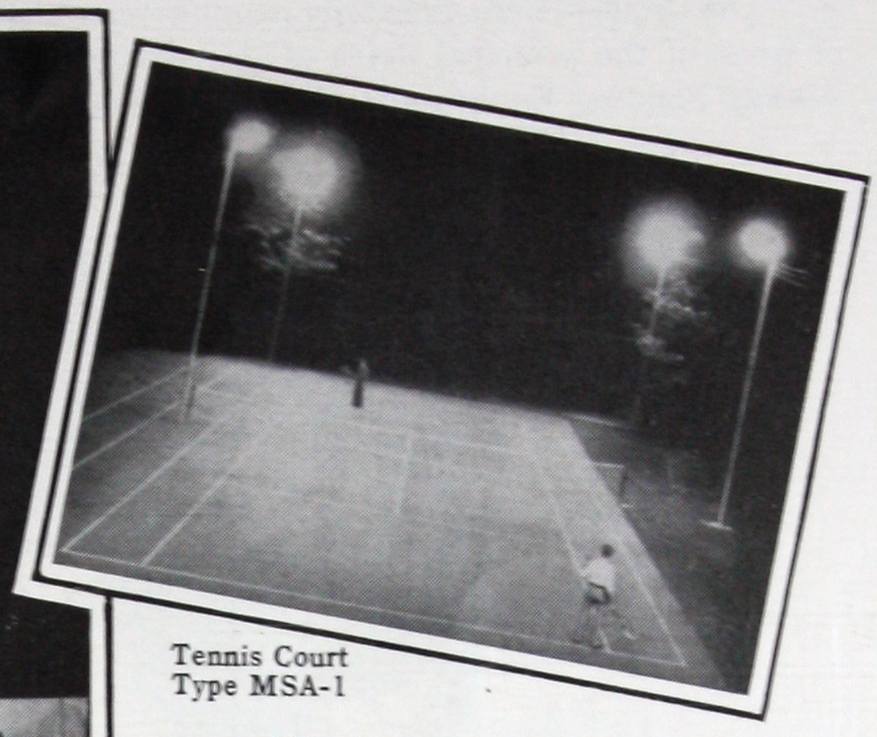


Lumber Yard
Type ADA-16

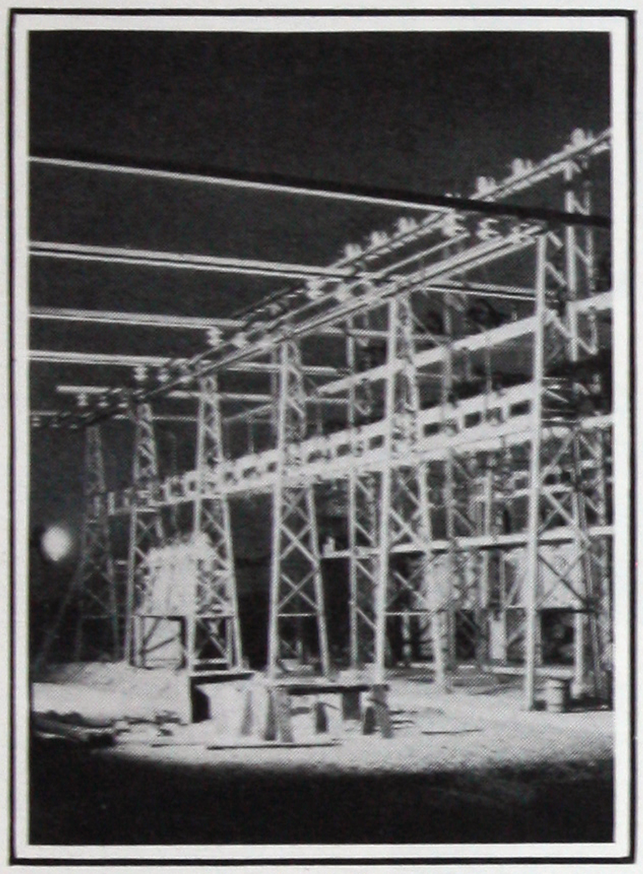


Stadium
Type LCE-24

Monument
Type TTE



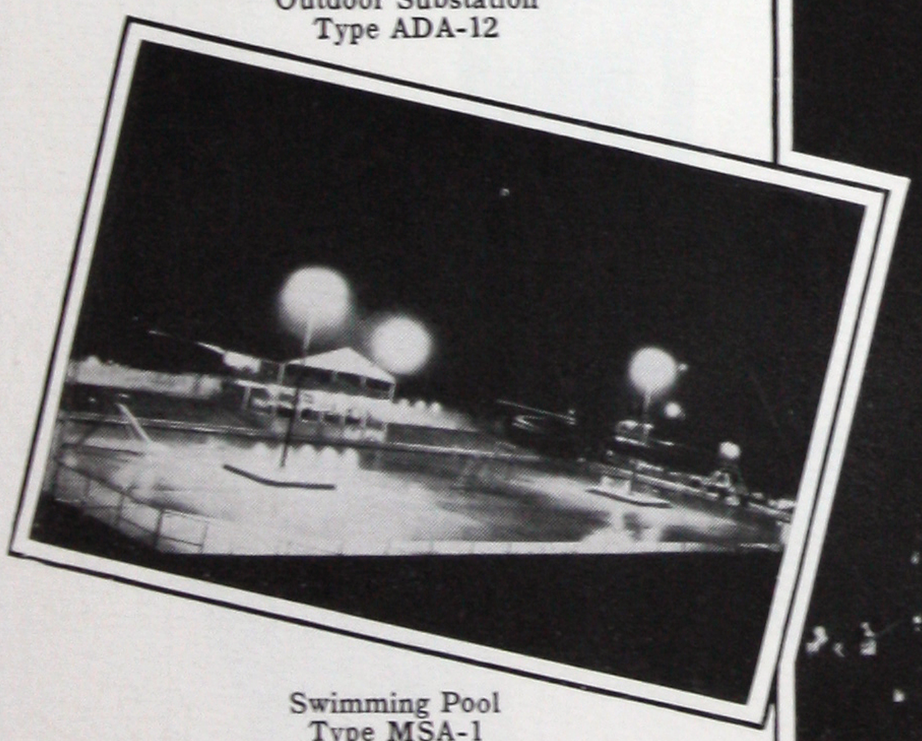
Tennis Court
Type MSA-1



Outdoor Substation
Type ADA-12

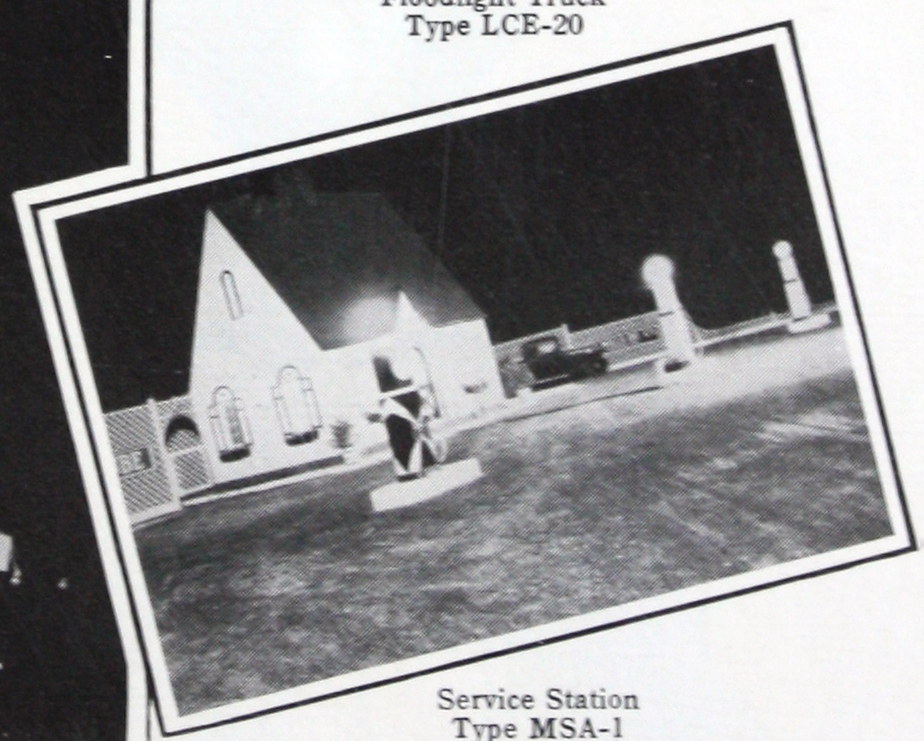
A Floodlight for Every Purpose

Floodlight Truck
Type LCE-20



Swimming Pool
Type MSA-1

Chimney
Type LCE-24

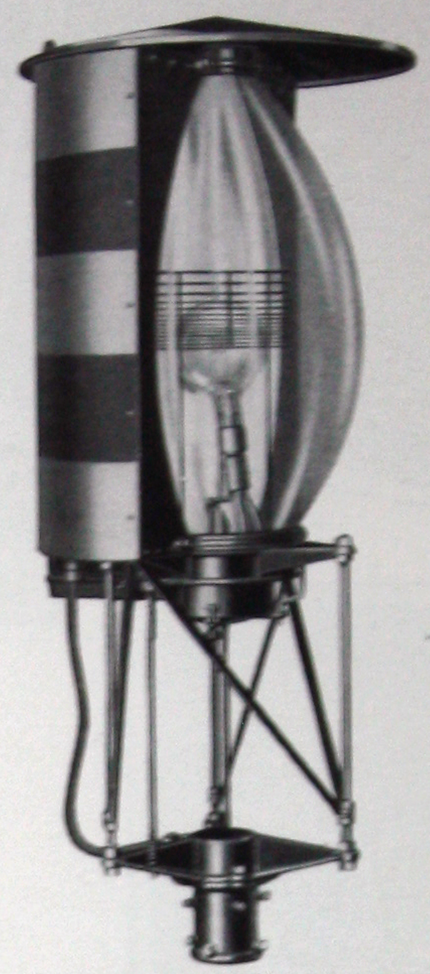


Service Station
Type MSA-1

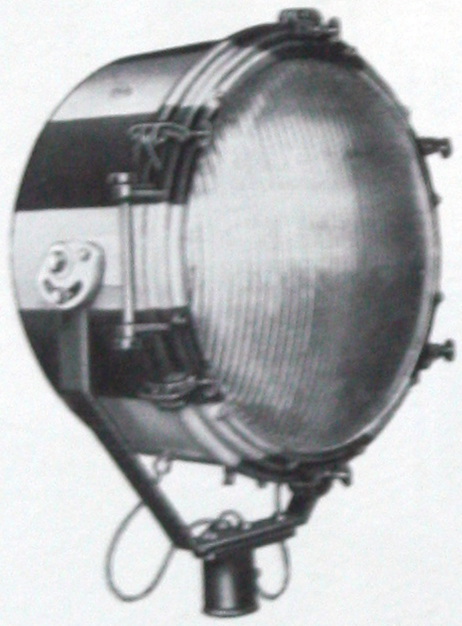
AIRPORT AND AIRWAY LIGHTING EQUIPMENT

The Crouse-Hinds Company manufactures a complete line of lighting equipment for airports and airways. Illustrations of some of the principal items of this equipment are shown on this page and page 29. Catalog 311 on Airport and Airway Lighting Equipment will be sent upon request.

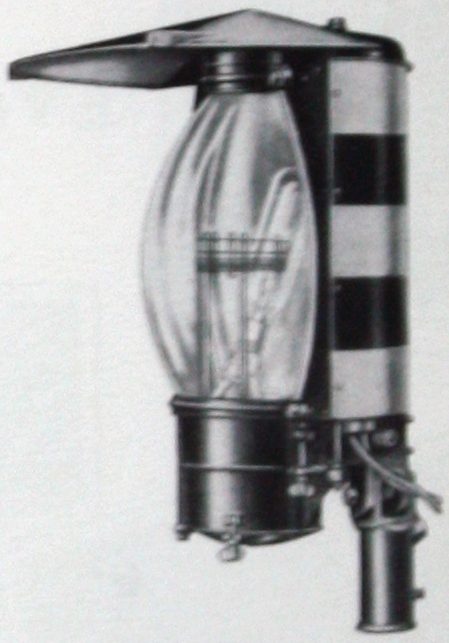
Type DCB-24
Revolving Beacon



Type AKP-24
Landing Field Floodlight
5000-Watt



Type DCE-24
Landing Field Floodlight
3000-Watt



Type AKP-14
Landing Field Floodlight
1500-Watt

Type VAP
Series Boundary
Light

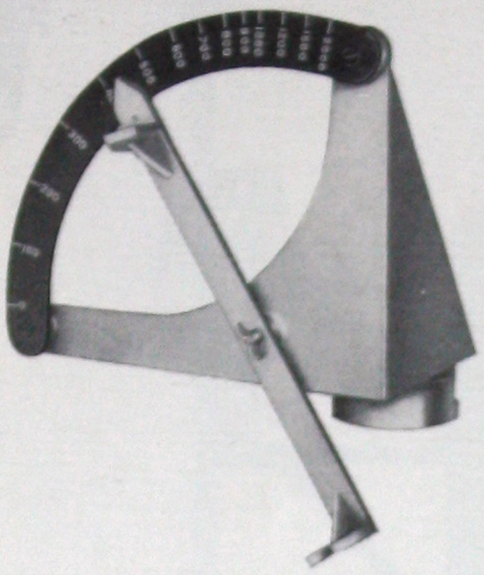
Type VAP
Multiple Boundary
Light

Type VAW
Series Boundary
Light

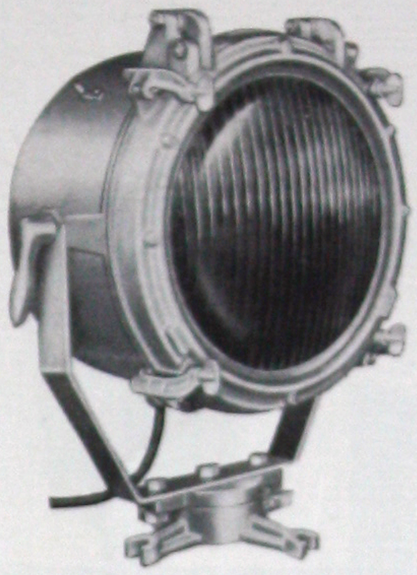
Type VAW
Multiple Boundary
Light

AIRPORT AND AIRWAY LIGHTING EQUIPMENT

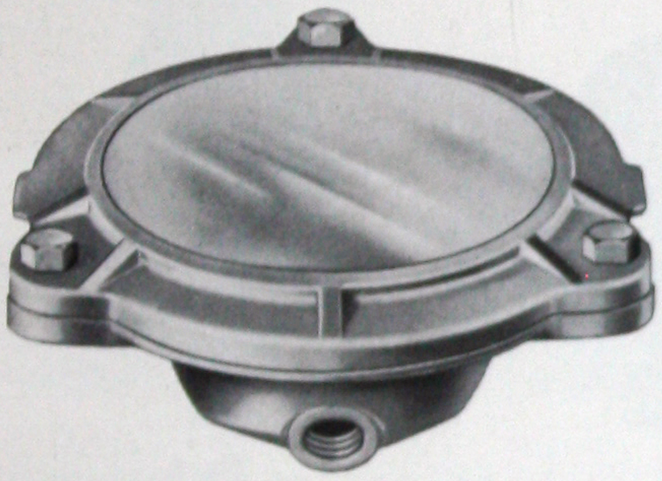
Type DCE-14
Ceiling Projector



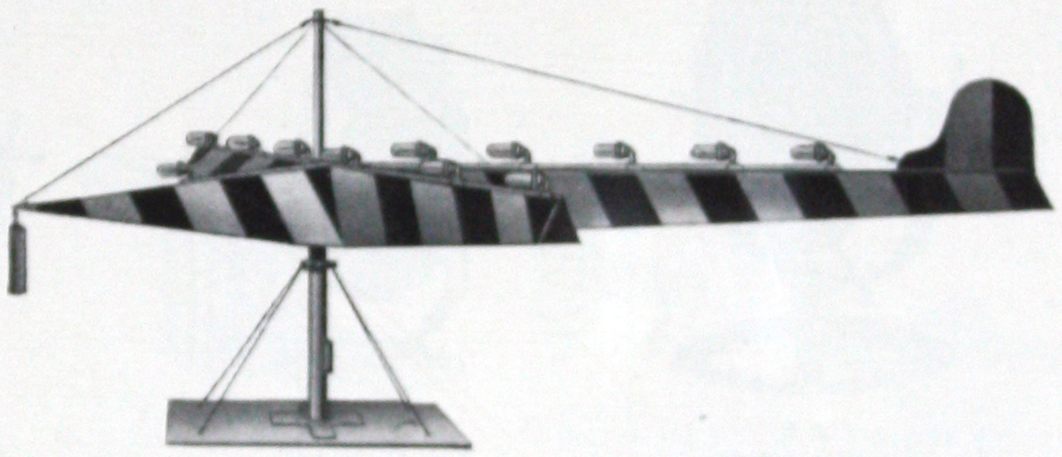
Ceiling Height Indicator



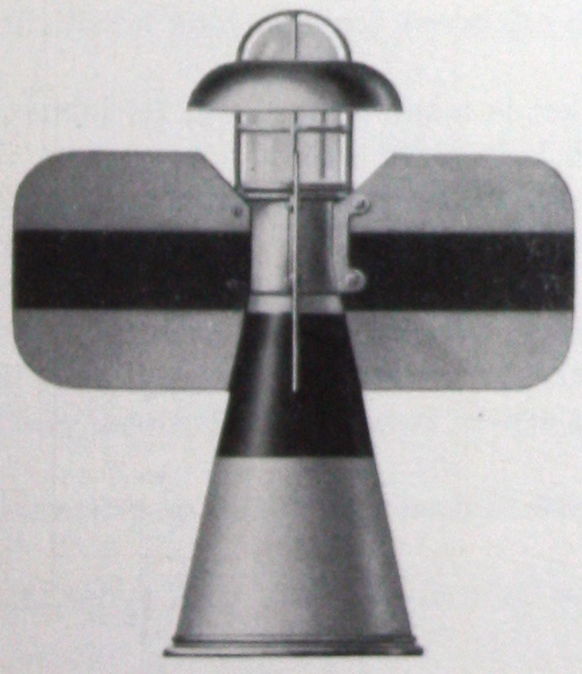
Type DCE-14
"On Course" Light



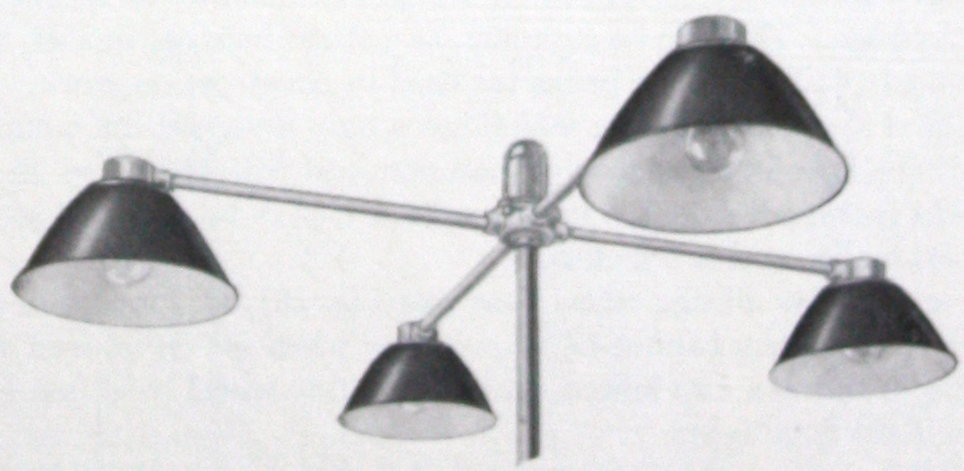
Type APD
Flush Marker Light



Wind Direction Indicator



Type APB
Disconnecting
Boundary Light
With Reflector



Type APW-3
Wind Cone Fixture

SPECIAL BASES AND BRACKETS

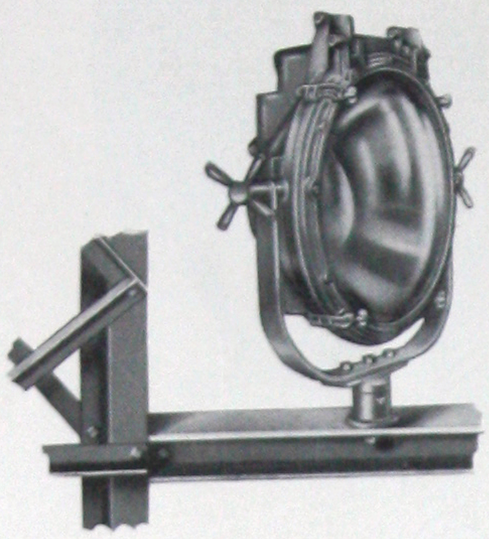


Fig. 1
Floodlight with
Bolt Base

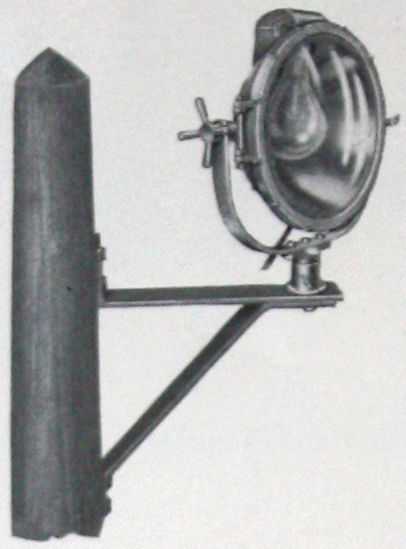


Fig. 2
Floodlight with
Short Pole Bracket

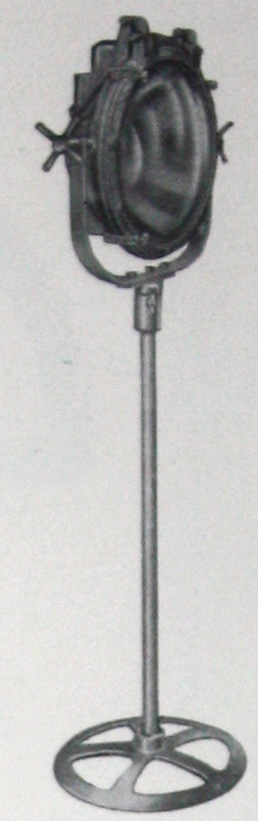


Fig. 3
Floodlight with
Pedestal Base

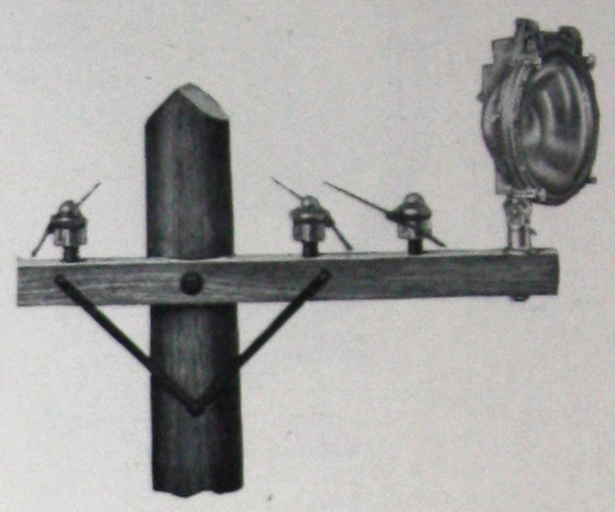


Fig. 4
Floodlight with
Cross-Arm Base

Fig. 5
Floodlight with
Wheel Base

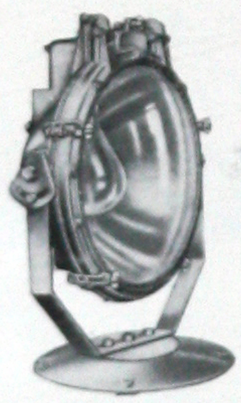


Fig. 6
Floodlight with
Cast Silicon-Aluminum
Alloy Wheel Base

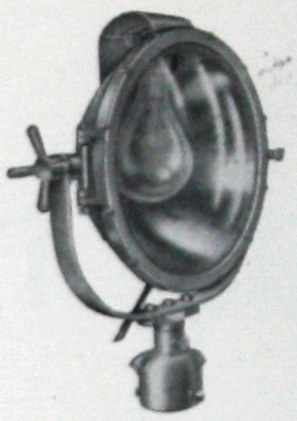


Fig. 7
Floodlight with
4-Inch Slip-Fitter Base

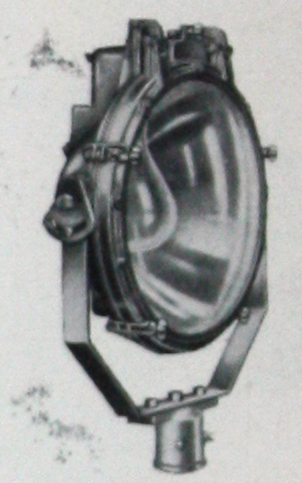


Fig. 8
Floodlight with
2½-Inch Slip-Fitter Base

There are cases where one of the above special bases or brackets is required for making the best installation of projectors. Each of these has been designed to meet a special type of installation as described in the following paragraphs. Unless otherwise specified, all bases and brackets on this page will fit type LCA-12, LCE-12, LCA-16, LCE-16, LDA-12, LDE-12, LDA-16, LDE-16, RME, or TTE projector.

Fig. 1 shows a bolt base (see Fig. 9), consisting of a turret with ¾ x 1½-inch cap screw for attaching floodlight to a pipe cap, structural steel, or any other convenient mounting place.

Fig. 2 shows a pole bracket (see Fig. 10) which is 18 inches long. This bracket is made of bar iron, 2½ inches wide and ¼-inch thick. The pole ends of the bracket and brace are drilled for use with ⅝-inch lag screws.

Fig. 3 shows a pedestal base (see Fig. 11) of sufficient height to bring the center of the projector approximately 4½ feet from the base. This can be supplied, at a slight increase in cost, with pedestal of any height desired. A base of this type is particularly suitable for a projector used in construction work.

Fig. 4 shows a projector which has a base designed for mounting on a standard wooden cross arm (see Fig. 12). The stud of the base is 1¼ inches in diameter and will, therefore, fit any standard insulator pin hole. This stud is 6½ inches long and is threaded back 3 inches so that it may be fastened securely to any cross arm of standard dimensions, which are 3½ x 4½ inches or 4 x 5 inches.

Fig. 5 shows a large wheel base (see Fig. 13), 17½ inches in diameter. This base is used principally on portable projectors so that they cannot be tipped over when set on uneven surfaces.

Fig. 6 shows a cast silicon-aluminum alloy wheel base (see Fig. 14). This base can only be used with types LCE-20 and LCE-24 floodlights.

Fig. 7 shows a slip-fitter base for 4-inch pipe (see Fig. 15).

Fig. 8 shows a slip-fitter base for 2½-inch pipe (see Fig. 16). This base can only be used with types LCE-20 and LCE-24 floodlights.

SPECIAL BASES AND BRACKETS

Fig. 9
Bolt Base

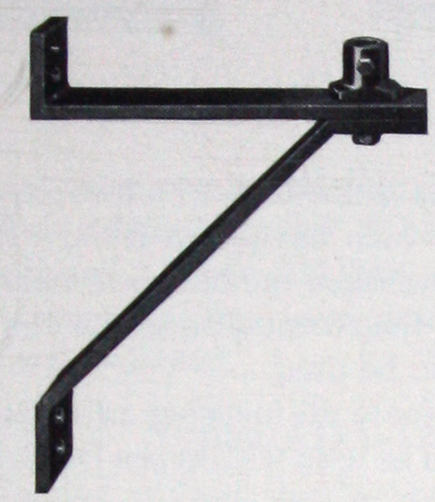


Fig. 10
Pole Bracket

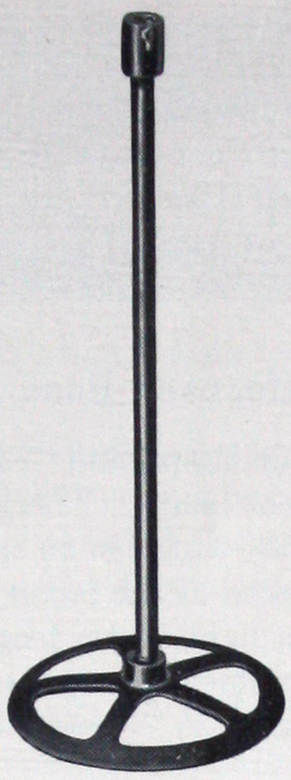


Fig. 11
Pedestal Base

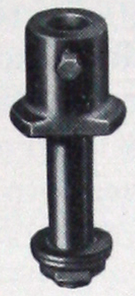


Fig. 12
Cross-Arm Base

Fig. 13
Wheel Base

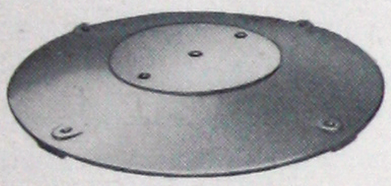


Fig. 14
Cast Silicon-Aluminum
Alloy Wheel Base

Fig. 15
4-Inch Slip-Fitter Base

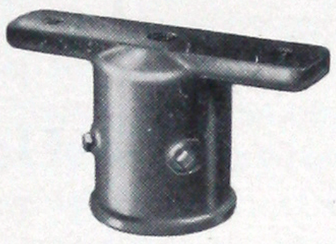


Fig. 16
2½-Inch Slip-Fitter Base

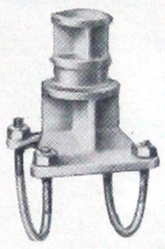


Fig. 17
U-Bolt Base

Fig. 18
Railroad Base

When any one of these special bases or brackets is ordered with a projector, the catalog number and list price of the particular base or bracket should be added to the catalog number and list price of the projector.

Description	Catalog Number	List Price, each	
		When Purchased Separately	When Purchased with Projector in place of Regular Base, add
Bolt Base (Fig. 9)	HL8666	$ 2.50	No Extra
Pole Bracket (Fig. 10)	HL6820	11.00	8.50
Pedestal Base (Fig. 11)	HL6817	7.00	4.50
Cross-Arm Base (Fig. 12)	HL6818	3.50	1.00
Wheel Base (Fig. 13)	HL6816	5.00	2.50
Wheel Base for LCE-20 and LCE-24 Only (Fig. 14)	HL9462	11.00	6.00
Slip-Fitter Base, 4-inch (Fig. 15)	HL8766	8.50	6.00
Slip-Fitter Base, 2½-inch, for LCE-20 and LCE-24 Only (Fig. 16)	HL9292	5.00	No Extra
U-Bolt Base for ADA-16 Only (Fig. 17)	HL2714	6.00	No Extra
Railroad Base for ADA-16 Only (Fig. 18)	HL2693	6.00	No Extra
Pole Bracket for LCE-20 and LCE-24 Only	HL2630	15.00	10.00
Pole Bracket for ADA-16 Only	HL2632	12.00	6.00
Pole Bracket for MSA-1 Only	HL9928	13.00	3.50
Slip-Fitter Base, 4-inch, for MSA-1 Only	HL715	9.50	No Extra

FOCUSING DIRECTIONS

Floodlights and searchlights which are equipped with parabolic glass reflectors must have the lamp filament located at the focal point of the reflector to produce an effective beam of light.

In some installations, where the natural spread of the floodlight beam is not sufficient to light the area evenly, it may be necessary to place the lamp filament slightly out of focus. Moving the filament behind the focal point will widen the beam. The lamp should always be first focused to produce the narrowest beam.

Several methods of determining when the lamp is focused are described below, and specific directions for focusing the different types of floodlights listed in this catalog are given.

Prefocused Base Lamps

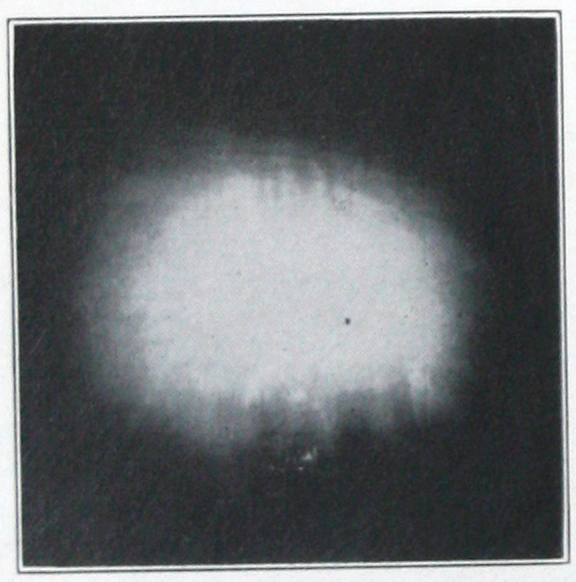
A prefocused base has been developed for certain lamps, and Crouse-Hinds floodlights and searchlights can be furnished with prefocused base lamp receptacles to take these lamps. The lamps which have been listed with the base so far are projection lamps in type T-20 bulb. These lamps are tested in an optical jig when the base is attached, and the filament is lined up with the base. The searchlights are adjusted at the factory with the receptacles set for the lamp to be used, and never require refocusing, unless a lamp of different light center length is to be used.

Prefocused base lamps are very strongly recommended, as they eliminate all focusing adjustments and simplify the relamping and maintenance of floodlights and searchlights. These lamps can be used with types DCE-14, DCX-14, DCY-14, DCE-24, DCX-24, and DCY-24.

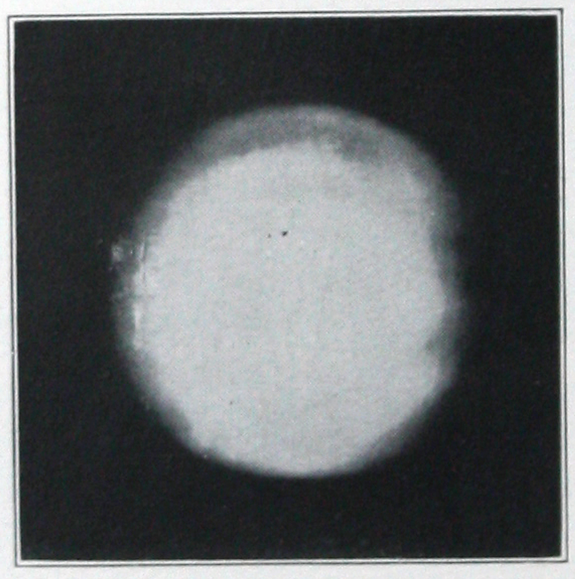
General Focusing Directions

Throw the beam of light on a wall or the ground about 100 feet away; adjust the lamp until the smallest spot is obtained. Or, throw the beam of light into the air; then adjust the lamp until the narrowest beam is obtained. Moving the lamp slightly back of the focal point will give a wider beam of light. The illustrations below show the results of different adjustments.

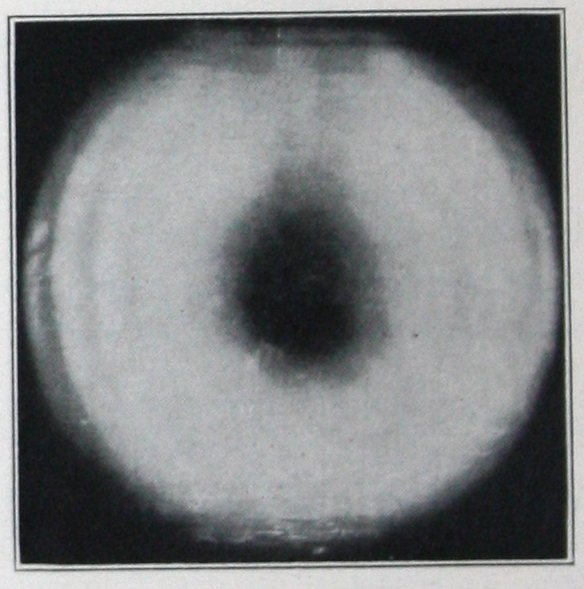
Spots of Light



Lamp Ahead of Focus



Lamp at Focus



Lamp Behind Focus

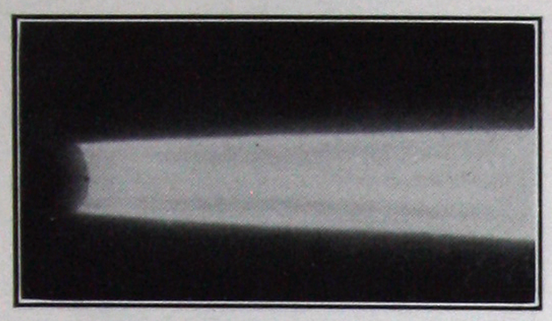
Above are shown photographs of the spots of light on a screen when the lamp is ahead of the focal point, at the focal point, and behind the focal point. It is quite obvious from these photographs that best results are obtained when the lamp is properly focused.

Illuminated Reflectors

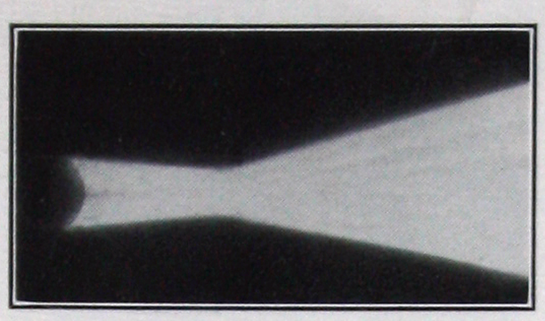
When the light source is properly located at the focal point of a parabolic reflector, the reflector is evenly illuminated over its entire surface, but when the light source is not at the focal point, the reflector is unevenly illuminated. If the center of the reflector is dark, the lamp is too far ahead of the focal point. If the outside edge of the reflector is dark, the lamp is too far behind the focal point.

FOCUSING DIRECTIONS

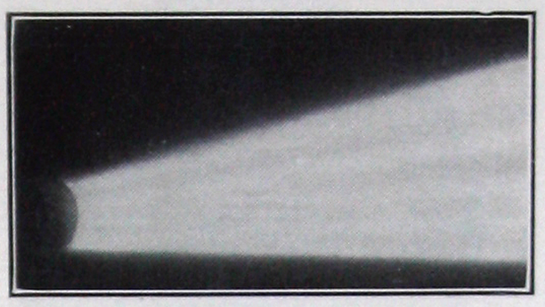
Searchlight Beams



Lamp at Focus



Lamp Ahead of Focus



Lamp Behind Focus

Perhaps the most striking way to tell when the light source is properly focused is to throw the beam of the searchlight up into the air and look at it from the side. When the light source is properly focused the beam of light is narrowest, which means maximum penetration. When the light source is ahead of the focal point the rays of light converge, then diverge, and the beam of light is shaped like an hour-glass. When the light source is behind the focal point the rays of light diverge and the beam of light is fan-shaped.

Types ADA-12, ADA-16, FDA-12, LDA, and LDE

The focusing mechanism of these floodlights has a one-way adjustment operated by a knurled wheel on the rear of the housing. Turn the knurled wheel first one way and then the other until the best beam is obtained.

Types DCE-14, DCX-14, and DCY-14

These searchlights have a two-way focusing mechanism operated by two knurled wheels on the bottom of the housing. The larger wheel raises or lowers the lamp, and should be used to set the filament opposite the center of the reflector. The smaller wheel tips the lamp backward or forward, moving the filament through the focal point of the reflector. The filament should be moved back and forth until the most satisfactory beam is secured. This adjustment can be made in the daytime by means of the peep-sights which are drilled in the housing and closed by screws. Opposite the peep-sights are targets on the side of the housing. The lamp filament must be lined up from both sides by sighting first through one peep-sight at the opposite target and then through the other peep-sight at its target. The center of the filament should line up with both peep-sights and centers of targets. This adjustment should be made every time a new lamp is installed. Searchlights with prefocused base lamp receptacles do not require refocusing unless a lamp of different light center length than the one for which the socket is adjusted, is to be used.

Types DCE-24, DCX-24, and DCY-24

These searchlights, when not equipped with prefocused base lamp receptacles, are provided with three-way focusing mechanisms which have three separate adjusting screws. The searchlight is provided with peep-sights, drilled through the housing, and with targets on the inside of the housing, opposite the peep-sights. Focusing should be done in the daytime, lining the center of the filament up with first one peep-sight and the opposite target, and then with the other peep-sight and its target. If focusing must be done at night, lay a flashlight in the housing, pointing at the target which is being used. Searchlights equipped with prefocused base lamp receptacles do not require refocusing unless a lamp of different light center length than the one for which the socket is adjusted, is to be used.

Types LCE-24, LCE-20, LCA-16, LCE-16, LCA-12, LCE-12

The focusing mechanism of these floodlights has a one-way adjustment which allows the lamp to be moved in or out along the main axis of the reflector. The adjustment is made by a wing screw on the outside of the housing. Floodlights with the lamp receptacle at the top of the housing have the focusing screw at the top and rear of the housing. Floodlights with the lamp receptacle at the bottom of the housing have the focusing screw at the bottom and rear of the housing. To focus, turn the screw first one way, then the other, until the most satisfactory beam is obtained.

DAYLIGHT FOCUSING: Types LCE-20 and LCE-24 are equipped with focusing tubes on the inside of the housing. These floodlights can be focused in the daytime by sighting through the tube and moving the lamp in or out until the center of the filament is seen through the tube. If it is found desirable to throw the lamp out of focus to obtain greater beam spread, the focusing tube should be reset to take care of this. After that the floodlight should always be refocused in the daytime when the lamp is renewed.

Types TTA and TTE

The focusing mechanism of these floodlights has a one-way adjustment operated by a lever on the side of the housing, behind the lamp receptacle. The lever is locked in position by a wing nut. Loosen the wing nut and move the lever back and forth until the most satisfactory beam is obtained. Then lock in position with the wing nut.

LENSES

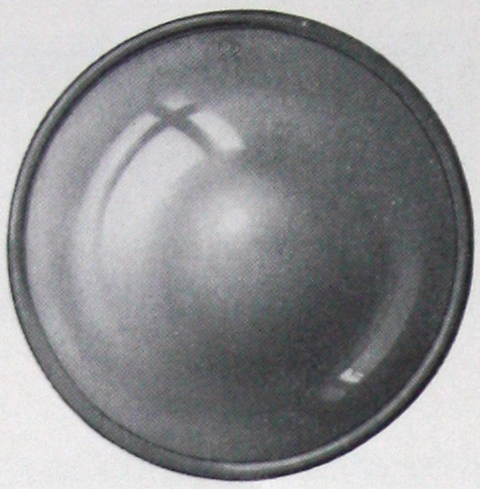


Fig. 1
Plain Lens

Fig. 2
Diffusing Lens

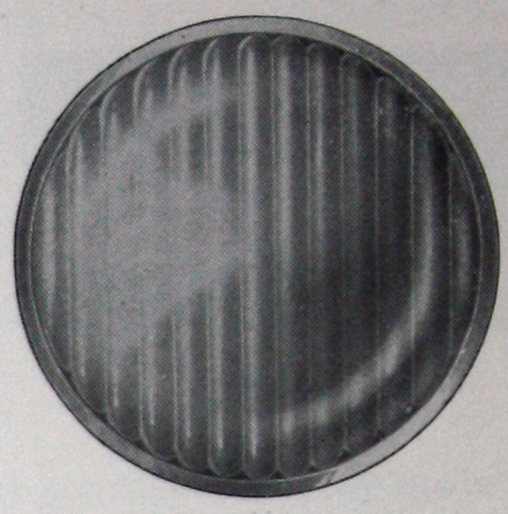


Fig. 3
Spread Lens

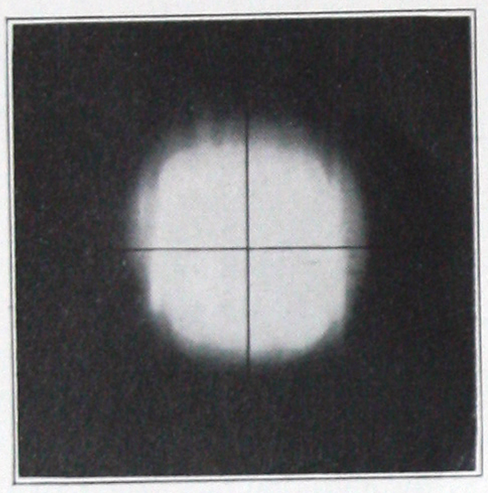


Fig. 4
Light Spot with Plain Lens

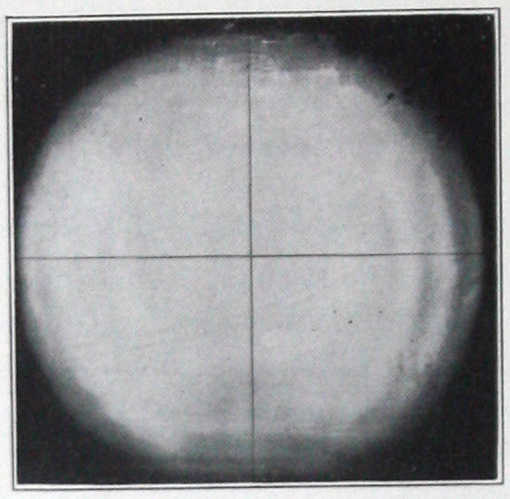


Fig. 5
Corresponding Light Spot
with Diffusing Lens

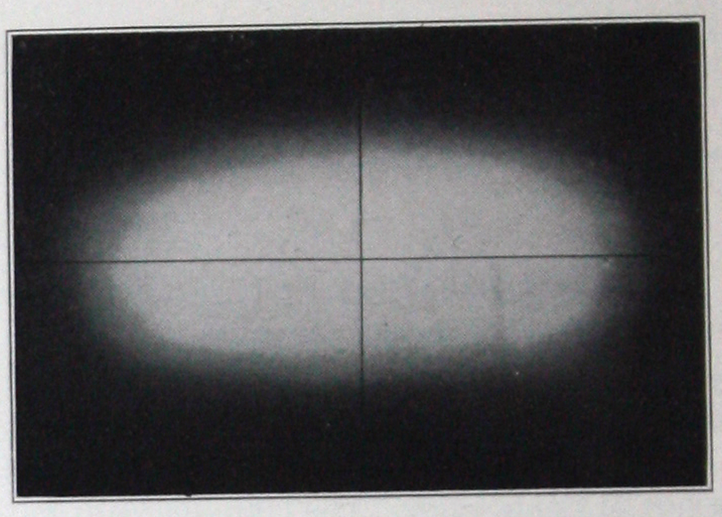


Fig. 6
Corresponding Light Spot
with Spread Lens

Standard Plain Lenses

All floodlight projectors listed in this catalog are supplied with plain, convex, Pyrex, heat-resisting lenses. Unless another lens is specified on the order, plain lens will be furnished. The plain lens does not alter the beam spread of the floodlight in any way.

Light Control Lenses

It is often desirable to increase the natural spread of a floodlight beam either in all directions or in one direction only. To meet this condition, the Crouse-Hinds Company can supply two different types of lenses as described below. There is no additional charge for these lenses, if specified on the order.

Diffusing Lenses

The convex, heat-resisting, diffusing lens is shown in Fig. 2. This lens spreads the natural beam both horizontally and vertically, giving a larger light spot, as shown in Fig. 5. This lens is used where the natural spread from the floodlight is not sufficient to cover the area desired. The actual beam spread in degrees produced with different floodlights is shown in the table of Illumination Data on pages 40 and 41. Diffusing lenses should not be ordered with any projector arranged for use with concentrated filament lamps. The concentrated filament lamps are used to secure a narrow beam spread, and if a wider beam is desired, a floodlight using standard PS-bulb lamps should be used.

Spread Lenses

The convex, heat-resisting, spread lens is shown in Fig. 3. This lens spreads the light at right angles to the direction of the ribs, leaving the spread in the other direction the same. The resulting beam is elliptical in shape, as shown in Fig. 6. When the ribs are vertical, the beam is spread horizontally and when they are horizontal, the beam is spread vertically. The lens can be set at the factory for either spread, and the order should specify which is desired. This type of lens is very useful when lighting rectangular areas. The nominal beam spread produced with the standard spread lens is 45 to 50 degrees. The actual beam spread depends on the characteristics of the floodlight with which the lens is used. These values are given in the table of Illumination Data on pages 40 and 41.

LENSES

Lenses are listed for all floodlights listed in this catalog. To obtain the catalog number and list price of any lens, first refer to table No. 1 and obtain the diameter of lens required to fit the floodlight; then under table No. 2 will be found the catalog number and list price of the style of lens of that diameter.

Table No. 1—Lens Diameters

Type	Diameter	Type	Diameter	Type	Diameter	Type	Diameter	Type	Diameter
ADA-12	12″	FDA-12	12″	LDA-12	12″	RLS-16	16 7/16″	RMU-12	12″
ADA-16	16 7/16″	FDV-12	12″	LDA-16	16 7/16″	RLU-12	12″	TTA	15 1/16″
DCE-14	14″	LCA-12	12″	LDE-12	12″	RLU-16	16 7/16″	TTE	15 1/16″
DCE-24	25″	LCA-16	16 7/16″	LDE-16	16 7/16″	RM-10	10″		
DCX-14	14″	LCE-12	12″	RAS-12	12″	RM-12	12″		
DCX-24	25″	LCE-16	16 7/16″	RAS-14	14″	RME-10	10″		
DCY-14	14″	LCE-20	20″	RAS-16	16 7/16″	RME-12	12″		
DCY-24	25″	LCE-24	24½″	RLS-12	12″	RMU-10	10″		

Table No. 2—Lens Prices

Diameter	Color	Catalog Number			List Price, each	
		Plain	Spread	Diffusing	Purchased Separately	Additional, if Supplied in Floodlight
10″	Clear	**HL6813**	**HL6815**	**HL6814**	**$ 5.00**	No Extra
12″	Clear	**HL6802**	**HL6811**	**HL6803**	**7.40**	No Extra
12″	Red	**HL2005**	**HL2016**	**HL2012**	**11.90**	**4.50**
12″	Amber	**HL8130**	**HL2019**	**HL2015**	**15.40**	**8.00**
12″	Green	**HL2009**	**HL2018**	**HL2014**	**15.40**	**8.00**
12″	Blue	**HL2006**	**HL2017**	**HL2013**	**15.40**	**8.00**
12″	Purple	**HL2051**	**HL2054**	**HL2052**	**15.40**	**8.00**
14″	Clear	**HL9151**	.....	**HL9153**	**9.00**	No Extra
15 1/16″	Clear	**HL8738**	**HL651**	**HL650**	**10.25**	No Extra
15 1/16″	Red	**HL652**	**HL660**	.....	**13.00**	**2.75**
15 1/16″	Amber	**HL655**	**HL663**	.....	**17.00**	**6.75**
15 1/16″	Green	**HL654**	**HL662**	.....	**17.00**	**6.75**
15 1/16″	Blue	**HL653**	.....	.....	**17.00**	**6.75**
16 7/16″	Clear	**HL6804**	**HL6810**	**HL6805**	**10.50**	No Extra
16 7/16″	Red	**HL241**	.....	.....	**16.25**	**5.75**
16 7/16″	Amber	**HL244**	.....	.....	**20.50**	**10.00**
16 7/16″	Green	**HL242**	.....	.....	**20.50**	**10.00**
16 7/16″	Blue	**HL243**	.....	.....	**20.50**	**10.00**
20″	Clear	**HL9016**	**HL9018**	**HL9017**	**20.00**	No Extra
24½″	Clear	**HL9019**	**HL9021‡**	**HL9020***	**45.00**	No Extra
25″	Clear	**HL2156**	**HL2153‡**	.....	**45.00**	No Extra

CEMENT FOR LENSES

The lenses of most floodlights and industrial lighting units listed in this catalog are cemented to the door with a special plastic cement which does not dry out. The amount of cement required for the various sizes of lenses is as follows:

Lens Diameter	Approximate Cement Required
Up to 12″	2 oz.
12 to 16″	3 oz.
16 to 20″	4 oz.
24″	6 oz.

Cement for Lenses	Catalog Number **HL9012**	**$1.50** per pound, list price

‡HL9021 and HL2153 are 40-degree spread lenses; HL9314, 80-degree, 24½-inch spread lens or HL2154, 80-degree, 25-inch spread lens can be furnished at the same price.

*HL9020 diffusing lens has a 50-degree spread; HL2748, 90-degree diffusing lens will be furnished at the same price.

INCANDESCENT LAMPS FOR FLOODLIGHT PROJECTORS

SELECTION OF LAMPS: Incandescent lamps are made in several styles of bulbs and with different types of filaments. The life of incandescent lamps varies from 50 to 1000 hours, depending upon the service for which they are designed.

The large lamps generally used for interior lighting are known as "General Lighting Service" lamps and are made in PS bulbs. These lamps are suitable for the majority of floodlight installations, and are recommended with most floodlights listed in this catalog where it is not necessary to project the light for great distances or to confine it to small areas. They should be used for all short range or medium range lighting on account of their lower cost, longer life, and higher efficiency.

Some floodlighting installations require that the light be concentrated into a narrow beam and projected to a distance. For this class of floodlighting, a line of lamps known as "Floodlight" lamps are available. These lamps are made in G bulbs, have concentrated filaments, and an average rated life of 800 hours compared to 1000 hours for the PS-bulb lamps. They produce less light per watt than the "General Lighting Service" lamps but, for certain installations, this sacrifice in efficiency is justified by the greater beam concentration that can be obtained with them. When using these lamps, the precautions noted under "Burning Position" should be observed.

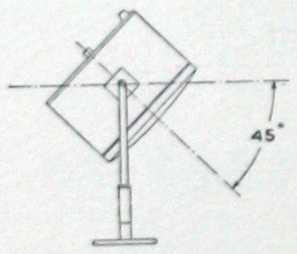
Searchlights require lamps of even greater filament concentration. Most searchlight installations require a high beam candle power and the life of the lamp can be sacrificed in order to obtain higher filament temperatures with correspondingly higher candle power. These lamps are made in either a G or a T bulb and usually have an average rated life of from 50 to 100 hours. Searchlight lamps are usually greatly restricted as to burning position and the paragraph below on this subject should be noted carefully.

VOLTAGE: The voltage at which an incandescent lamp operates is of extreme importance. The circuit voltage at the lamp should correspond with the rated voltage of the lamp. If, for instance, a 115-volt lamp is used and the circuit at the floodlight only delivers 105 volts, the light output of the lamp is reduced approximately 26%. In the same way over voltage will greatly shorten the life of a lamp. Trouble with lamps burning out frequently can usually be traced to high voltage. A lamp rated for 110 volts, placed on a 125-volt circuit will burn for only 18% of its rated life. Lamps can be obtained rated at 105, 110, 115, 120, 125, or 130 volts. The safest way is to check the voltage at the floodlight terminals with a voltmeter at night, while the floodlight is in operation, and then if the voltage does not equal the rated lamp voltage which is etched on the bulb, lamps of the nearest voltage rating should be obtained.

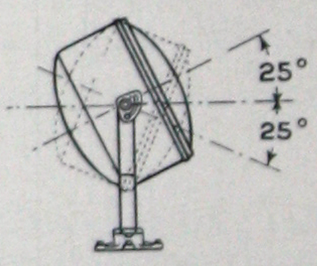
FLOODLIGHTS ON SERIES CIRCUITS: Floodlights can be operated from constant current series street lighting systems. This is often convenient in parks or other places where a multiple circuit may not be available. It is recommended that series-multiple transformers be used with their primary in the constant current line and secondary designed to deliver 115 volts for operation of a multiple lamp. Any of the standard floodlights listed in this catalog can be used in this manner. Sometimes it is more convenient to use series lamps in the floodlights, and some of the floodlights listed in this catalog will accommodate the series lamps. The lamps that each will take are listed under the heading "Series Lamps" on page 37. If series lamps are used, it is necessary to use an insulating transformer between the series line and the floodlight.

LAMP BURNING POSITION: The table of lamp data on page 37 contains a column headed "Burning Position". It will be noted that certain lamps can be burned in any position without their life being affected. Other lamps are greatly restricted as to burning position. For example, type DCE-24 searchlights are designed to operate with lamps mounted base down and with the lamp bulb vertical with respect to the main axis of the searchlight. The 1000-watt, T20-bulb, 115-volt lamp must be operated within 25 degrees of a base down position. This means that if this lamp were used in a DCE-24 searchlight, the searchlight should not be operated for long periods with the beam tipped more than 25 degrees above or below horizontal. If the searchlight must be operated continuously with the beam tipped more than this, the 1000 or 1500-watt, G40-bulb, 115-volt lamp could be used, as these lamps can be operated in any position except within 45 degrees of base up. The following floodlights, when used with 115-volt lamps of the types recommended, can be operated in any position: LCA-12, LCA-16, LCE-12, LCE-16, LCE-20, LCE-24, MSA-1, RM, RME, RMU, TTA, TTE.
Caution: 230-volt lamps are not recommended for floodlighting, but if the 750 or 1000-watt, PS-bulb, 230-volt lamps are used, they must be operated within 45 degrees of base up.

Do not tip floodlight down more than this.
This applies to types ADA-12, ADA-16, FDA-12, LDA-12, LDA-16, LDE-12, and LDE-16 when used with 250, 500, or 1000-watt, G-bulb lamps.



Do not tip searchlight up or down more than this for continuous service.
This applies to types DCE-14 and DCE-24 when used with lamps limited to burning position of within 25 degrees of base down.



Lamp Bulbs

G Bulb

A Bulb

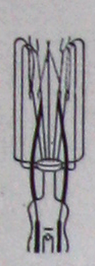
T Bulb

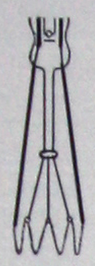
P Bulb

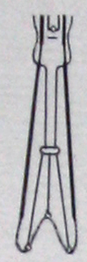
PS Bulb

The figures following the bulb type, in the listing on page 37, indicate the maximum diameter of the bulb in eighths of an inch. For example—a PS-40 bulb has a maximum diameter of 40/8 or 5 inches.

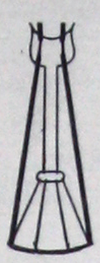
INCANDESCENT LAMPS FOR FLOODLIGHT PROJECTORS


C5

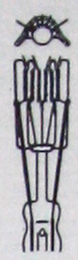

C7


C7A

Lamp Filaments


C9

C13


C13A

Orders for incandescent lamps are not solicited, but for the convenience of customers, orders for lamps will be accepted, when such orders can be filled from stock. All lamps are shipped at purchaser's risk, and the purchaser must assume responsibility for defective lamps and for lamps broken in shipment.

Watts	Volts	Bulb	Base	Light Center Length	Life in Hours	Lumens †	Fila-ment	Net Price	Light-ing Service	Burn-ing Posi-tion	Used with Types
1500	115	PS-52	Mogul	9½″	1000	33000	C7A	$5.75	Gen.	Any	LCE-24, MSA-1
1500	115	G-40	Mogul	5 3/16″	800	27750	C5	9.00	Fld.	B.D.▪	DCE-24, LCE-24
1000	115	PS-52	Mogul	9½″	1000	20200	C7A	4.00	Gen.	Any	ADA-16, LCE-20, LCE-24, MSA-1
1000	115	G-40	Mogul	5 3/16″	800	17800	C5	6.75	Fld.	B.D.▪	ADA-16, DCE-14, DCE-24, LCE-20, LCE-24
1000	115	T-20	Mg. P.	3 7/16″	50	27000	C13A	6.90	Proj.	B.D.•	DCE-14, DCE-24, DCX-14, DCX-24, DCY-14, DCY-24
1000	115	T-20	Mg. P.	3 7/16″	500	19000	C13A	6.90	Air. Fl.	B.D.•	Ditto
900	30	T-20	Mg. P.	3 7/16″	50	23500	C13	7.15	Proj.	B.D.•	Ditto
750	115	PS-52	Mogul	9½″	1000	14550	C7A	3.75	Gen.	Any	ADA-16, LCE-20, LCE-24, MSA-1
500	115	PS-40	Mogul	7″	1000	9650	C7A	2.00	Gen.	Any	LCA-16, LCE-16, RAS-16, RLS-16, RLU-16, TTA, TTE
500	115	G-40	Mogul	4¼″	800	8300	C5	3.25	Fld.	B.D.▪	DCE-14, FDA-12, FDV-12, LCA-16, LCE-16, LDA-16, LDE-16, TTA, TTE
300	115	PS-35	Mogul	7″	1000	5370	C7A	1.25	Gen.	Any	LCA-16, LCE-16, RAS-16, RLS-16, RLU-16, TTA, TTE
250	115	G-30	Medium	3″	800	3575	C5	1.75	Fld.	B.D.▪	ADA-12, DCE-14, DCX-14, DCY-14, FDV-12, LCA-12, LCE-12, LDA-12, LDE-12
250	115	G-30	Medium	3″	200	4175	C5	1.75	Spot.	B.D.▪	Ditto
200	115	PS-30	Medium	6″	1000	3340	C9	.80	Gen.	Any	ADA-12, LCA-12, LCE-12, RAS-14, RLS-12, RLU-12, RM-12, RME-12, RMU-12
150	115	PS-25	Medium	5¼″	1000	2295	C9	.60	Gen.	Any	ADA-12, RAS-12, RAS-14, RLS-12, RLU-12, RM-12, RME-12, RMU-12
150	115	P-25	Medium	3″	1000	1710	C5	1.60	H. L.	B.D.▪	ADA-12
100	115	PS-25	Medium	5¼″	1000	1370	C9	.50	Gen.	Any	ADA-12, RAS-12, RLS-12, RLU-12, RM-12, RME-12, RMU-12
100	115	A-23	Medium	4⅜″	1000	1360	C9	.35	Gen.	Any	RAS-12, RLS-12, RLU-12, RM-10, RME-10, RMU-10
100	115	P-25	Medium	3″	200	1350	C5	1.00	Spot.	B.D.▪	ADA-12
94	115	P-25	Medium	2 1/16″	1000	913	C5	1.10	S. R. H.	Any	Ditto
60	115	A-21	Medium	3¾″	1000	690	C9	.20	Gen.	Any	RM-10, RME-10, RMU-10

SERIES LAMPS*

Rated Initial Lumens	Amperes	Bulb	Aver. Watts	Light Center Length	Life in Hours	Fila-ment	Net Price	Burning Position	Used with Types
2500	6.6	PS-35	147.0	7″	1350	C-2	$1.60	Any	LCA-16, LCE-16, TTA, TTE
4000	6.6	PS-35	226.0	7″	1350	C-2	1.90	Any	Ditto
6000	6.6	PS-40	329.5	7″	1350	C-2	2.50	Any	Ditto
6000	20	PS-40	317.4	7″	1350	C-2	2.50	Base Up	Ditto
10000	20	PS-40	521.0	7″	1350	C-7	3.10	Base Up	Ditto
15000	20	PS-40	762.0	9½″	1350	C-7	4.50	Base Up	ADA-16, LCE-20, LCE-24
25000	20	PS-52	1225.0	9½″	1350	C-7	7.00	Base Up	Ditto

*The series lamps listed above can be used with floodlights, providing a line insulating transformer is placed between the series line and the floodlight.

†The values of lamp lumens given in the above table are approximately correct. These values change frequently and the latest values should be obtained from the schedules of the lamp manufacturers.

▪Can be burned in any position except within 45° of the vertical base up.

•Must be burned within 25° of base down.

Prices are net with no cash discount, and are subject to change without notice.

Air Fl.=Airport Floodlight. B. D.=Base Down. H. L.=Headlight. S. R. H.=Street Railway Headlight.

REFLECTORS

Diameter	Used on Types	Catalog Number	List, each
	Smooth Glass Reflectors		
11½″	ADA-12. For G-bulb lamp	HL439	$12.00
12″	FDA-12, FDV-12, LDA-12, LDE-12	HL6325	30.00
12″	LCA-12, LCE-12	HL9022	20.00
13⅝″	TTA, TTE	HL8743	26.50
14″	DCE-14, DCX-14, DCY-14	HL9452	65.00
16″	ADA-16. For PS-bulb lamp	HL2337	30.00
16″	ADA-16. For G-bulb lamp	HL2338	30.00
16″	LDA-16, LDE-16	HL6858	75.00
16″	LCA-16, LCE-16	HL9014	30.00
19½″	LCE-20	HL9015	50.00
24″	LCE-24	HL8518	60.00
24″	DCE-24, DCX-24, DCY-24	HL9875	175.00
	Hammered Glass Reflectors		
9⅝″	RM-10, RME-10, RMU-10	HL9183	$12.00
11½″	ADA-12. For PS-bulb lamp	HL749	12.00
12″	LCA-12, LCE-12	HL9116	20.00
12″	RM-12, RME-12, RMU-12	HL9181	18.00
13⅝″	TTA, TTE	HL8747	26.50
16″	ADA-16. For PS-bulb lamp	HL2339	30.00
16″	LCA-16, LCE-16	HL9117	30.00
19½″	LCE-20	HL9118	50.00
24″	LCE-24	HL9119	60.00
	Porcelain Enameled Steel Reflectors		
10″	RM-10, RME-10, RMU-10	HL806	$4.25
12″	RM-12, RME-12, RMU-12	HL5322	9.00
12″	RLS-12, RLU-12	HL8086	3.00
16″	RLS-16, RLU-16	HL7867	11.00

HOODS

Used on Types	Catalog No.	List, each	Catalog No.	List, each	Catalog No.	List, each
	Cast Feraloy		**Cast Silicon-Aluminum Alloy**		**Porcelain Enameled**	
LCE-12	HL9211	$9.50	HL9072	$12.00	.....	.....
LCE-16	HL9212	13.00	HL9073	16.00	.....	.....
LCE-20	.....	.....	HL9074	20.00	.....	.....
LCE-24	.....	.....	HL8757	25.00	.....	.....
RM-10, RMU-10	.....	.....	.....	.....	HL9093	‡
*RM-12, RMU-12	.....	.....	.....	.....	HL8622	†

LOUVERS

Louvers or vanes, mounted inside the housing are sometimes used with floodlights to eliminate objectionable spill light. If the spill light is objectionable on one side only, straight louvers are used; if on all sides, circular louvers should be used. In ordering straight louvers, the side on which cutoff is required must be specified as: top, bottom, right side, or left side, except in the case of types ADA-12, TTA, and TTE. These can be rotated to any desired position. The position as to right or left is taken with observer facing the lens.

Used on Types	Style of Louvers	Catalog Number	List Prices	Used on Types	Style of Louvers	Catalog Number	List Prices
ADA-12	Circular	HL2472		LCE-24	Straight—Bottom cutoff, PS lamp	HL2136	
ADA-12	Straight cutoff—One side	HL2388		LCE-24	Straight—Top cutoff, PS lamp	HL2136	
ADA-12	Straight cutoff—Two sides	HL2387		LCE-24	Straight—Right cutoff, PS lamp	HL2136	
ADA-16	Circular	HL2641		LCE-24	Straight—Left cutoff, PS lamp	HL2136	
ADA-16	Straight—Bottom cutoff	HL2656	On	LCE-24	Straight—Bottom cutoff, for G lamp	HL2138	On
ADA-16	Straight—Top cutoff	HL2655	Re-				Re-
ADA-16	Straight—Right cutoff	HL2657	quest	LCE-24	Straight—Top cutoff, for G lamp	HL2138	quest
ADA-16	Straight—Left cutoff	HL2658		LCE-24	Straight—Right cutoff, for G lamp	HL2138	
ADA-16	Straight—Two sides Horizontal	HL2653		LCE-24	Straight—Left cutoff, for G lamp	HL2138	
ADA-16	Straight—Two sides Vertical	HL2654		TTA, TTE	Straight cutoff—One side	HL2662	
DCE-14#	Circular	HL9766		TTA, TTE	Straight cutoff—Two sides	HL2088	
DCE-24#	Circular	HL2679		TTA, TTE	Circular	HL2583	

*Hood is cast as part of door frame. #Also for types DCX and DCY.
†Add $17.00 to list price of floodlight. ‡Add $8.50 to list price of floodlight.

FLOODLIGHT CALCULATIONS

When planning a floodlight installation, the first thing to determine is the intensity to which the area must be lighted. Light intensity is expressed in foot candles. A foot candle is the intensity obtained when one lumen of light falls on one square foot. The intensity required for lighting buildings, signs, or monuments depends on two things—(1) the color of the area to be lighted, and (2) the brightness of the surroundings. The object, to be attractive, must be bright enough to show a sharp contrast with its surroundings. Brightness depends on reflected light. A dark object is a poor reflector and must be lighted to many times the intensity necessary for a light colored object to show as effective a contrast. A sign whose letters and background are in contrasting colors can be lighted with a fraction of the light required if the letters and background are not in sharp contrast. If a sign or building is located in a downtown section of a city where the street lights are bright and there are many lighted signs and show windows, it must be lighted to a much higher intensity than if it were located in a park or residential section where the surroundings are dark. In the brightly lighted districts the eyes of observers are accustomed to a high level of illumination and a sign must be brilliantly lighted if it is to attract attention.

The table below gives the intensities which have been found through practice to be required for various types of installations. Varying conditions may require higher or lower intensities than those shown.

Methods of calculating industrial interior lighting are described on pages 44 and 45.

Color Floodlighting

Color floodlighting is accomplished with standard floodlights and colored heat-resisting lenses or color screens placed on the inside of the floodlights. Color screens absorb a large percentage of the light and necessitate the use of much higher wattages than are employed in white lighting. Under average conditions the wattage employed for color should be increased over what would be used for a first class installation of white lighting by the following multipliers: amber, 1.5; red, 2 to 3; green, 3; blue, 4 to 5.

Foot Candle Intensities Under Average Conditions

Subject to be Illuminated	If Surroundings are Poorly Illuminated	If Surroundings are Well Illuminated
	Foot Candles Intensity	Foot Candles Intensity
Buildings and Monuments:		
White or Cream	2 to 5	5 to 15
Light Yellow or Buff	3 to 6	6 to 15
Medium Buff	6 to 12	10 to 20
Dark Surface	8 to 30	20 to 40
Billboards and Signs	3 to 15	10 to 40
Gasoline Service Stations:		
Building	4 to 8	10 to 15
Yard and Drive	1 to 2	2 to 4

Subject to be Illuminated	Foot Candles Intensity
Bathing Beaches	0.25 to 2
Buildings:	
Construction	2. to 4
Excavation	0.5 to 2
Outdoor Athletics: Football, Baseball	2. to 6
Playgrounds	1. to 3
Yards of Mills and Factories	.25 to 1
Railroad Yards	.1 to 1.0
Automobile Parking Spaces	.25 to 1

Engineering Service

The Crouse-Hinds Company maintains a staff of competent illuminating engineers who specialize in floodlighting and industrial lighting problems. Many floodlighting and industrial lighting problems require the services of such engineers to plan an installation which will be effective and economical. The charts given on the following pages can be used to determine the approximate number of floodlights required and where time is limited, an estimate of the cost of the installation can be obtained with the help of these charts. A complete layout showing types of lenses, mounting positions, etc., can then be secured from Crouse-Hinds Illumination Department.

Engineering recommendations for floodlighting will be given upon receipt of the following information:

1. Sketch or blueprint showing all principal dimensions and possible locations for floodlights.
2. Color and material of area to be lighted.
3. Nature of lighting in the immediate vicinity.

The sketches or blueprints should show both plan and elevation views, fully dimensioned. Photographs should also be sent if possible. In the case of buildings, the architects' elevation drawings of all sides and floor plans are required.

Requests for lighting of industrial interiors should include the following information:

1. Plan and elevation views of areas to be lighted, showing nature of work performed in each area.
2. Color of walls.
3. Percentage of wall space occupied by windows.
4. Show work benches which are next to walls.
5. Show height of any travelling cranes.

FLOODLIGHT CALCULATIONS

The three charts on the following pages provide a quick and convenient method for calculating the approximate number of floodlights required to light a given area, and also the area that will be covered by each floodlight. To use the charts, first determine from the table on page 39 the required intensity in foot candles. Then calculate the number of square feet in the area to be lighted. If the area is less than 20,000 square feet, and the intensity greater than ¼ foot candle, use Chart 2 on page 42. If the area is greater than 20,000 square feet and the intensity below 5 foot candles, use Chart 3 on page 43. Referring to either Chart 2 or 3, place a straight edge across lines A and D, connecting the area involved on A with the required intensity on line D. Mark the corresponding reference point on line B. Now lay the straight edge across lines B, C, and E, connecting reference mark on B with LCE-24 mark on C. Read on line E the number of LCE-24 floodlights required. Then lay straight edge successively across reference mark, and LCE-12, LCE-16, and LCE-20. This will give the number of each size of floodlights that would be required to give the desired intensity. This takes no account of whether the floodlights selected will cover the area, and has no relation to the distance from the floodlight to the area. It simply assumes that all the light from the floodlights will fall on the area.

Turn to Chart 1, page 41. The most economical installation calls for the use of the largest floodlights that will cover the area evenly. The beam spread in degrees of the different floodlights with different lenses and lamps are given below. Select the beam spread of the unit desired. Referring to Chart 1, lay a straight edge connecting the degrees of spread on line A to the distance from the floodlight to the area lighted on line C. On line B read the diameter of the light spot and the area covered in square feet. Each area should, if possible, be lighted by more than one floodlight, and the beams should overlap so that each portion receives light from more than one floodlight. A spread lens produces an elliptical beam, and the spread in each direction is given in the table. In checking the area covered with a spread lens, the spread in each direction must be determined separately from Chart 1, page 41.

Chart 1 does not apply if the beam strikes the area at a sharp angle. It is approximately correct if the beam strikes the area within 20 degrees of perpendicular.

For estimating purposes, the approximate number of floodlights required can be determined from Chart 2 or 3. This will give an idea of the cost of the job and the question of whether to use, for instance, 500 or 1000-watt units; what lenses to use, and how and where to mount the floodlights can be decided later by Crouse-Hinds Illumination Department who will gladly assist customers in determining the most efficient and economical installation.

EXAMPLE: A white stone building located in a brightly lighted district is to be floodlighted from the roof of a building across the street which is 100 feet wide. The building is 45 feet high and 125 feet wide. Referring to the table of intensities on page 39, it is decided to use an intensity of 12 foot candles. Then, from Chart 2 on page 42, it is calculated that for an area of 45 x 125 or 5625 square feet, 6 LCE-24 floodlights are required. (This is figured by connecting 5625 on line A with 12 on line D and making a mark on line B. This mark is then connected with LCE-24 on line C. This line extended intersects line E at 6.) It is then necessary to check to see if these floodlights will cover the area uniformly. Referring to page 41, the beam spread of type LCE-24 with hammered reflector and plain lens is 20° horizontal and 18° vertical. From the Chart on page 41, this spread at 100 feet gives a spot 31 feet high by 35 feet wide. The building is 45 feet high, so it would be necessary to overlap two units vertically in order to cover it. This would only leave 3 beams to cover the width of the building and, as the 3 beams only cover 3 x 35 or 105 feet, the building could not be lighted uniformly by this combination. Since there is sufficient vertical beam spread, but not enough horizontal spread, it is obvious that spread lenses should be used. To check this, the beam spread, from table 1 on page 41, with spread lens is 18° x 45°. From Chart 1, page 41, the 45° will cover 80 feet at 100 feet distance. This will be very satisfactory as three light spots, each 80 feet wide, covering the width of the building, will provide double coverage and even illumination.

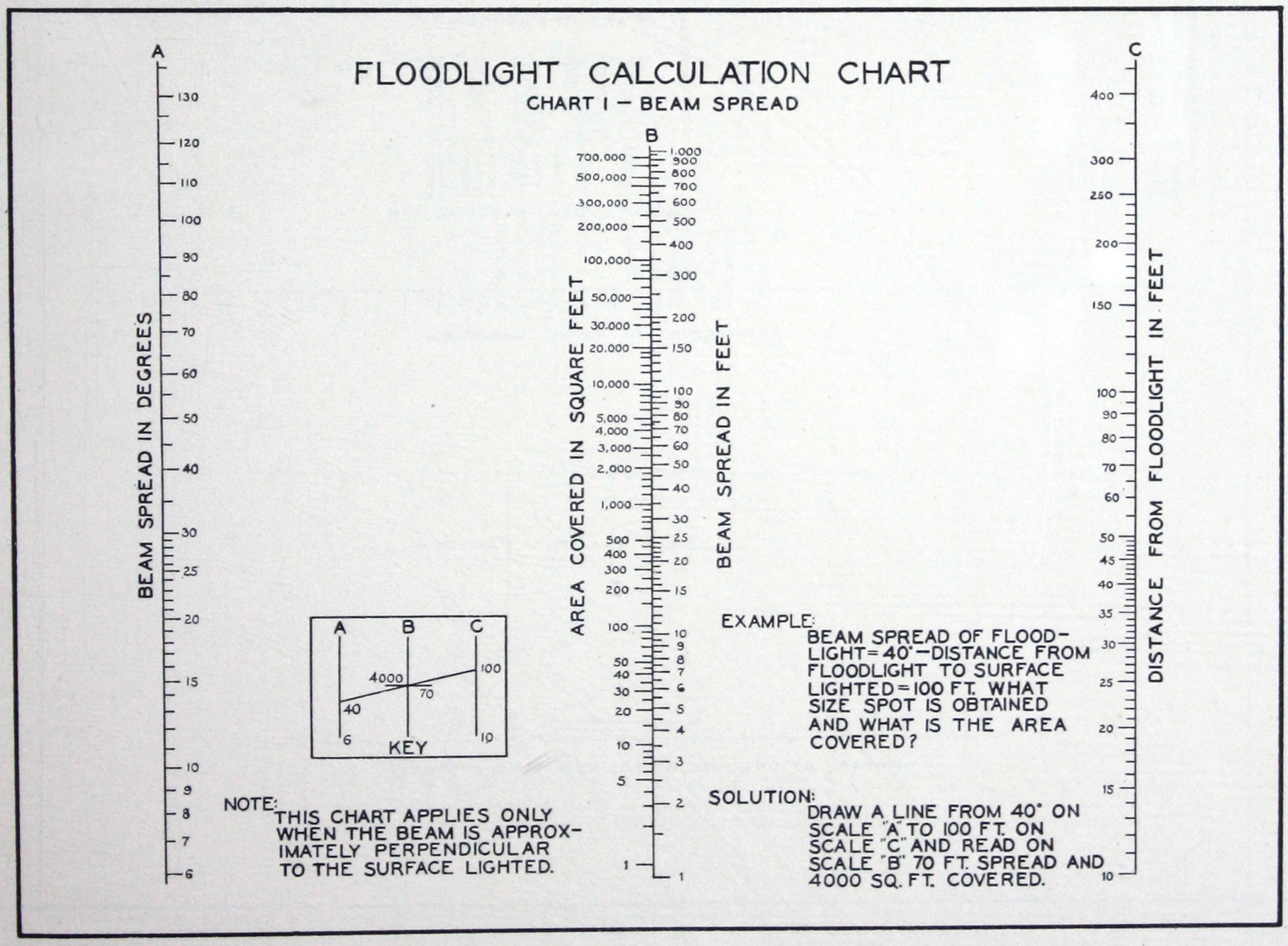
FLOODLIGHT ILLUMINATION DATA

Type	Reflector	Lens	Lamp		Beam Lumens	Beam Spread	
			Watts	Bulb		Horizontal	Vertical
ADA-12	Hammered	Plain	200	PS-30	1130	34°	33°
	Smooth	Plain	200	PS-30	1239	29°	26°
	Smooth	Spread	200	PS-30	1250	45°	27°
	Smooth	Diffusing	200	PS-30	1595	86°	85°
	Smooth	Plain	250	G-30	1260	12°	11°
	Smooth	Spread	250	G-30	1338	31°	12°
ADA-16	Hammered	Plain	1000	PS-52	8080	32°	30°
	Smooth	Spread	1000	PS-52	7615	44°	27°
	Smooth	Diffusing	1000	PS-52	8667	76.5°	74.5°
	Smooth	Plain	1000	G-40	6711	15°	14.5°
	Smooth	Spread	1000	G-40	7911	37°	17°
LCE-12	Hammered	Plain	200	PS-30	1565	45.5°	38.5°
	Smooth	Plain	250	G-30	1300	16°	14°
	Smooth	Spread	200	PS-30	1400	51°	26°
	Smooth	Diffusing	200	PS-30	1400	45°	38.5°
LCE-16	Hammered	Plain	500	PS-40	3800	34°	29.5°
	Smooth	Plain	500	G-40	3100	14°	11°
	Smooth	Diffusing	500	PS-40	3757	75°	69.5°
	Smooth	Spread	500	PS-40	3800	51°	22°
LCE-20	Hammered	Plain	1000	PS-52	8620	24°	18°
	Smooth	Plain	1000	PS-52	8620	21°	17°
	Smooth	Diffusing	1000	PS-52	7254	47°	36°
	Smooth	Spread	1000	PS-52	7780	42°	20°

FLOODLIGHT CALCULATIONS

FLOODLIGHT ILLUMINATION DATA—Continued

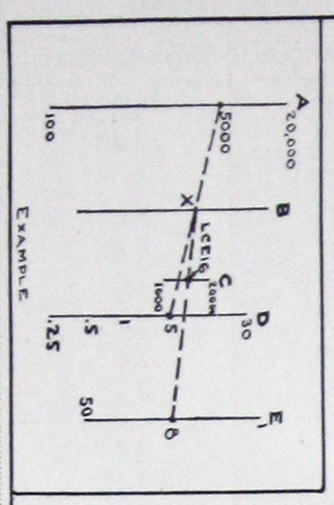
Type	Reflector	Lens	Lamp		Beam Lumens	Beam Spread	
			Watts	Bulb		Horizontal	Vertical
LCE-24	Hammered	Plain	1500	PS-52	14520	20°	18°
	Smooth	Plain	1500	PS-52	14850	18°	16°
	Smooth	45° Diffusing	1500	PS-52	15100	50°	50°
	Smooth	90° Diffusing	1500	PS-52	16500	90°	85°
	Smooth	45° Spread	1500	PS-52	14200	45°	18°
	Smooth	80° Spread	1500	PS-52	15000	80°	18°
	Smooth	Plain	1500	G-40	11400	11°	10.5°
	Smooth	45° Spread	1500	G-40	11800	42°	11°
	Smooth	80° Spread	1500	G-40	12000	80°	11°
LDE-12	Smooth	Plain	250	G-30	1355	14°	14°
	Smooth	Spread	250	G-30	1290	48°	14°
LDE-16	Smooth	Plain	500	G-40	2030	9°	9°
	Smooth	Spread	500	G-40	1960	46°	9°
MSA-1		None	1000	PS-52	12225	142°	138°
RM and RMU	Hammered	Plain	200	PS-30	1300	34°	38°
	Hammered	Spread	200	PS-30	1300	60°	40°
	Hammered	Diffusing	200	PS-30	1310	60°	60°
	Enameled	Plain	200	PS-30	1368	132°	132°
	Enameled	Diffusing	200	PS-30	1216	142°	142°
TTA and TTE	Hammered	Plain	500	PS-40	4180	41°	34.5°
	Hammered	Spread	500	PS-40	4100	66°	33°
	Hammered	Diffusing	500	PS-40	4460	124°	124°
	Smooth	Plain	500	G-40	2266	15.5°	13°
	Smooth	Spread	500	G-40	2650	55°	14°



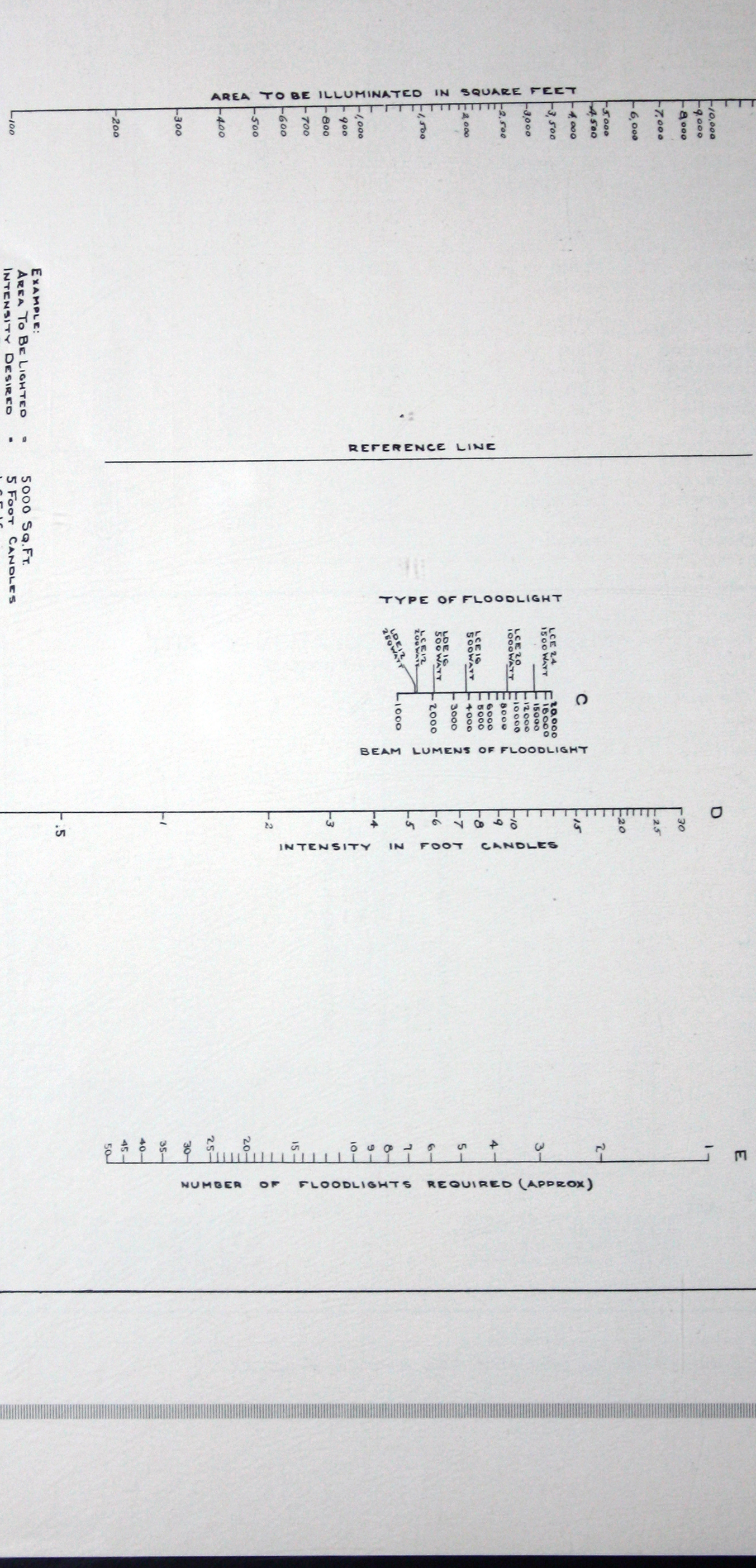
Note: For industrial interior lighting calculation data, see pages 44 and 45.

FLOODLIGHT CALCULATIONS

FLOODLIGHT CALCULATION CHART
CHART 2 SMALL AREAS



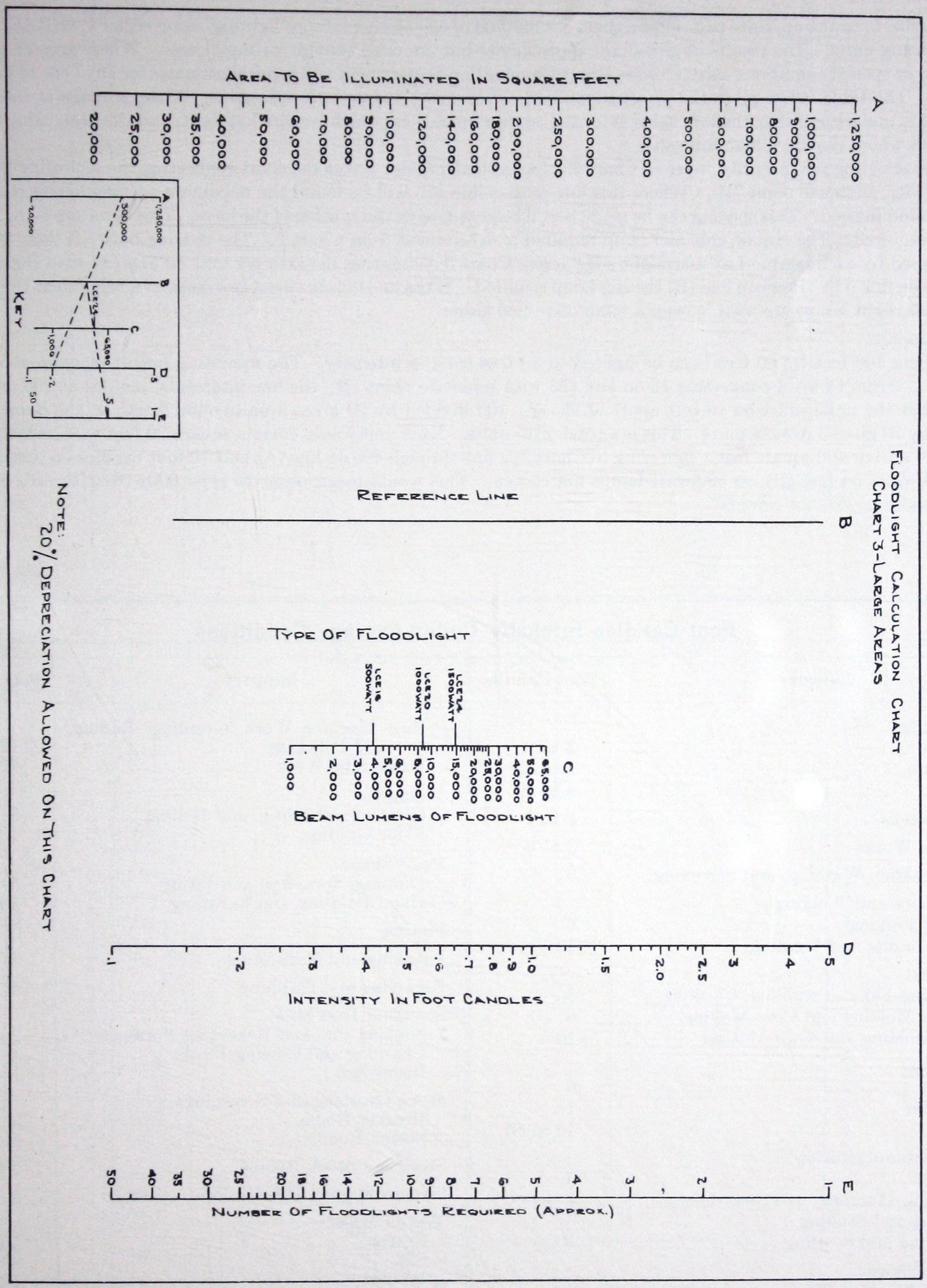
EXAMPLE



Example:
Area To Be Lighted = 5000 Sq.Ft.
Intensity Desired = 5 Foot Candles
Size Of Floodlight = LCE 16
A Line From 5000 Sq. Feet On Line "A" To 5 f.c. On Line "D" Gives Point "X" On Reference Line "B". From Point "X" A Line Thru LCE16 On Line "C" Gives, On Line "E", 8 Units Required

NOTE: 20% DEPRECIATION HAS BEEN ALLOWED ON THIS CHART

FLOODLIGHT CALCULATIONS



INTERIOR LIGHTING CALCULATIONS

The charts on the opposite page offer a short cut method of calculating interior lighting, using either type RAS, RLS, or RLU lighting units. The results obtained are approximate but are close enough for most cases. Where greater accuracy is desired or special conditions exist, Crouse-Hinds Illumination Department will furnish estimates for any type of industrial lighting. The table below gives the present standards of intensity for various industries. Where a range of intensity is shown, it is understood that the low value is for the coarser operations which require less light, and the high value for finer operations which require a high intensity.

After selecting the intensity, refer to Chart 4. Lay a straight edge across the chart connecting the mounting height on line (A) with reference point (B). Where this line crosses line (C) will be found the maximum spacing between units for uniform illumination. This spacing can be made less, if required, to fit the spacing of the bays. This determines the number of units required. The size of unit and lamp required is determined from Chart 5. The spacing between units gives the area covered by each lamp. Lay a straight edge across Chart 5 connecting the area per unit on line (A) with the required intensity on line (C). Read on line (B) the size lamp required. If the line falls between two sizes, as a rule select the nearest one. If daylight lamps are used, choose a lamp one-third larger.

Example:

A room 100 feet by 60 feet is to be lighted to 10 foot candles intensity. The mounting height of units above floor is 16 feet. From Chart 4 connecting 16 on line (A) with reference point (B), the line intercepts line (C) at 20 feet. This means that the units must be 20 feet apart or closer. 100 divided by 20 gives 5 units—the length of the room, and 60 divided by 20 gives 3 rows of units. This is a total of 15 units. Each unit would cover a square 20 feet wide, which has an area of 20 x 20 or 400 square feet. Referring to Chart 5, a line through 400 on line (A) and 10 foot candles on line (C) falls near 500 watts on line (B), so 500-watt lamps are chosen. This would mean using 15 type RAS-16 units with 500-watt lamps spaced on 20 foot centers.

Foot Candles Intensity Under Average Conditions

Industry	Foot Candles
Assembling:	
Rough	3 to 6
Medium	5 to 10
Fine	8 to 50
Boiler Rooms	2 to 4
Chemical Works	3 to 8
Coal Breaking, Washing, and Screening	3
Forge Shops and Welding:	
Rough Forging	6
Fine Forging and Welding	10
Foundries:	
Charging Floor, Tumbling, Cleaning	5
Rough Molding and Core Making	6
Fine Molding and Core Making	10
Inspecting:	
Rough	6
Medium	10
Fine	15 to 50
Leather Manufacturing:	
Vats	3
Cleaning, Tanning, and Stretching	4
Cutting and Stuffing	6
Finishing and Scarfing	10
Machine Shops:	
Rough Machine Work	6
Medium Machine Work, Rough Grinding, Buffing, and Polishing	10
Fine Machine Work, Grinding, Buffing, and Polishing	12
Extra Fine Work	12 to 50
Milling:	
Cleaning, Grinding, and Rolling	5
Flour Grading	15
Paint Shops:	
Dipping, Spraying, and Firing	5
Hand Painting and Finishing	10 to 20
Plating	5
Polishing and Burnishing	8
Receiving and Shipping	4
Steel and Iron Mills:	
Soaking Pits and Reheating Furnaces	2
Charging and Casting Floors	4
Inspection	15
Stone Crushing and Screening:	
Breaker Room	3
Screen Rooms	5
Store and Stock Rooms	2 to 6
Structural Steel Fabrication	6
Textile Mills:	
Cotton	5 to 10
Silk	8 to 15
Woolen	4 to 15
Warehouse	2
Woodworking	5 to 10

INTERIOR LIGHTING CALCULATIONS

Chart 4 Spacing Distance

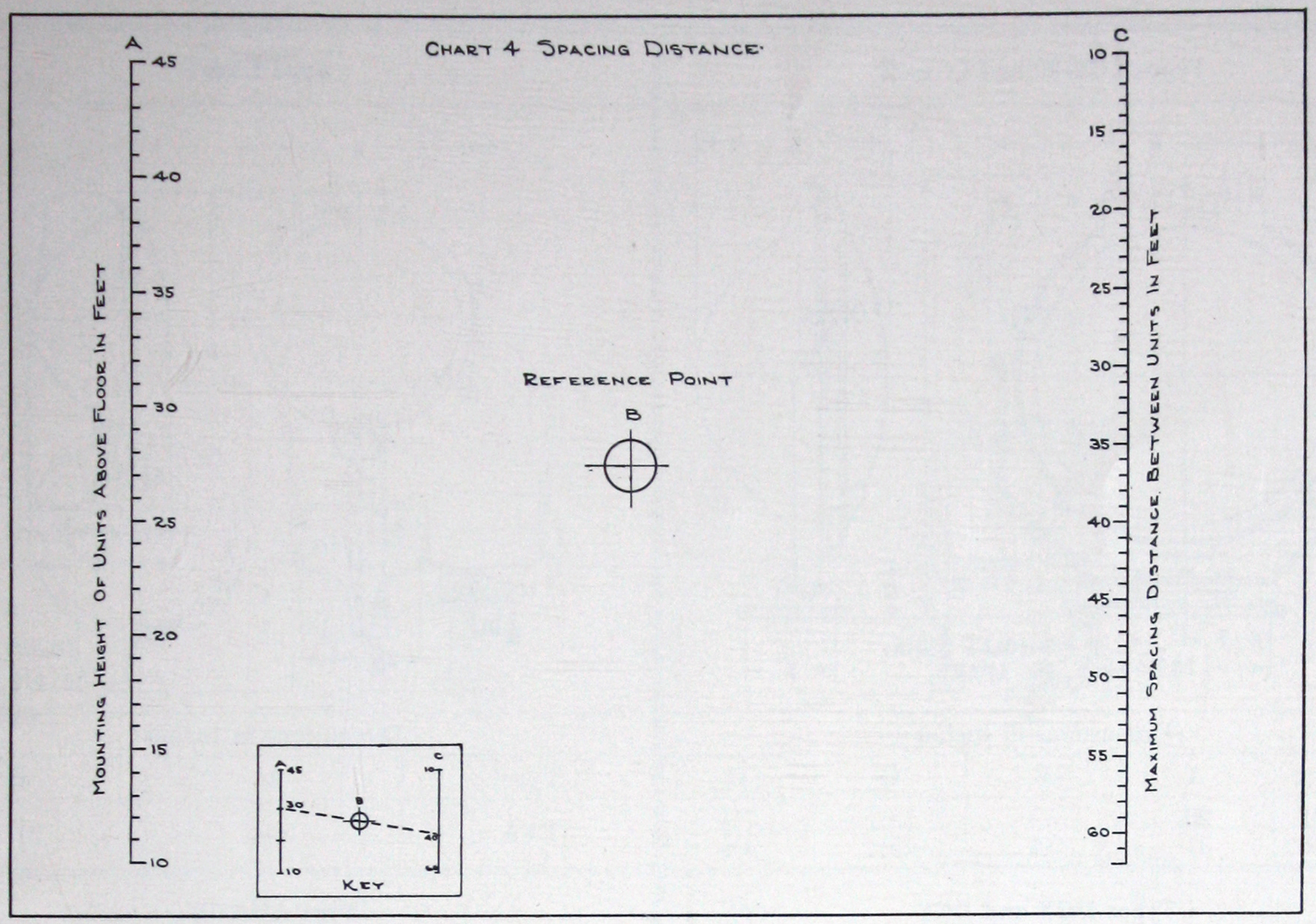
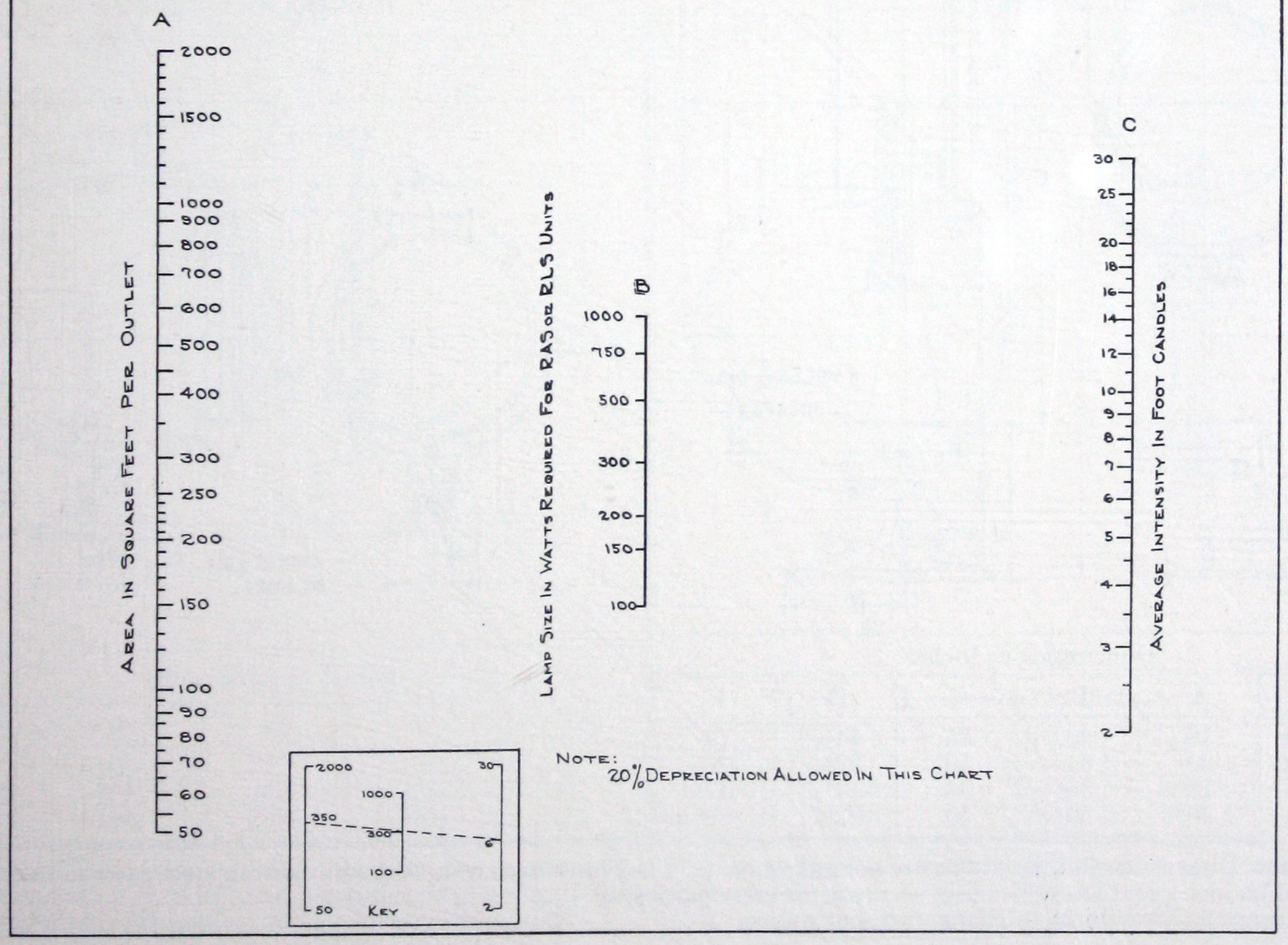


Chart 5 - Size Units Required

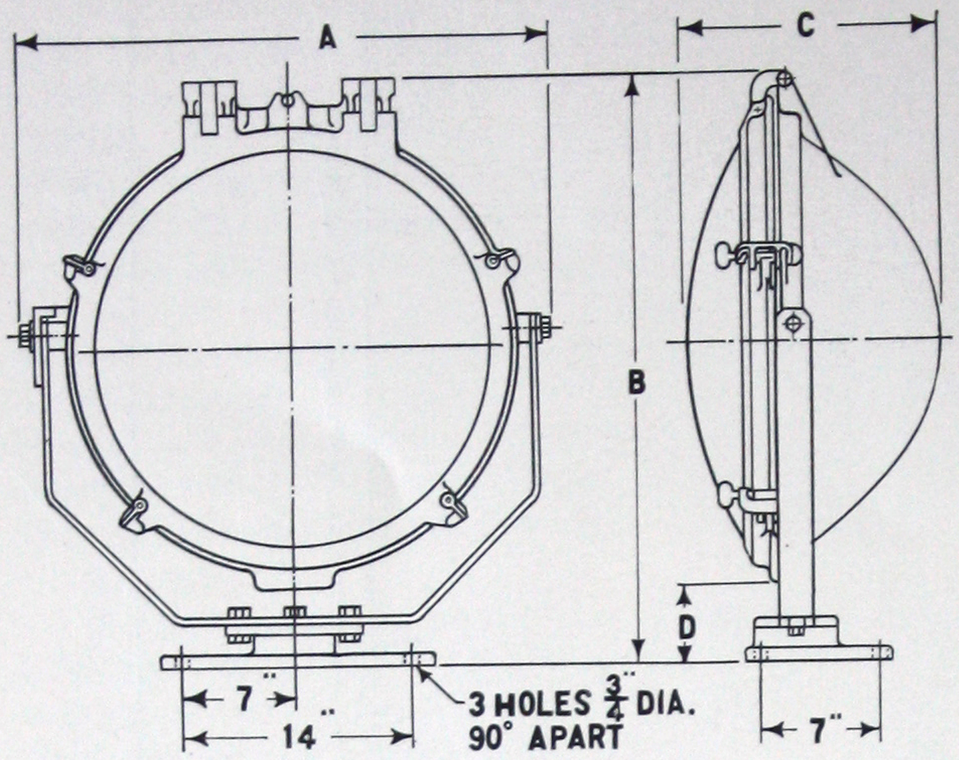


NOTE:
20% Depreciation Allowed In This Chart

FLOODLIGHT PROJECTORS

Dimensions

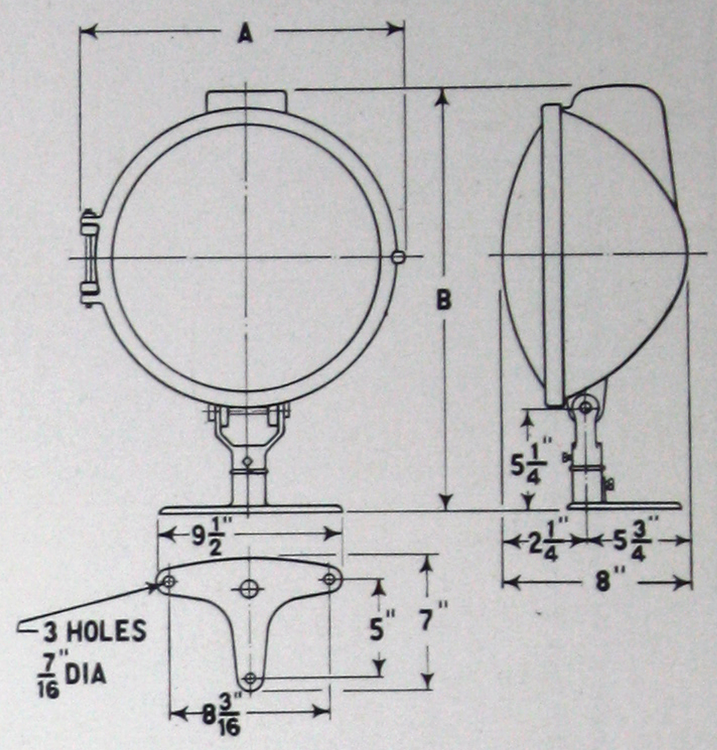
Types LCE-20 and LCE-24



Dimensions in Inches

Type	A	B	C	D
LCE-20	26	32	13¼	7¼
LCE-24	31	34	15½	4½

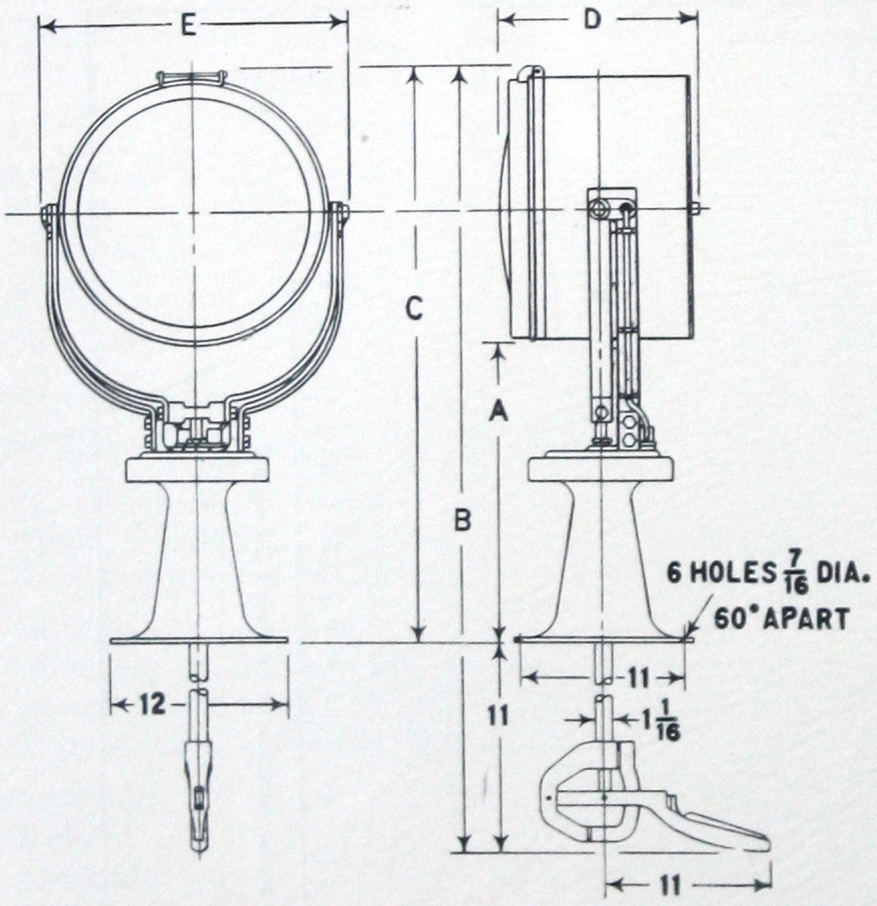
Type TTA



Dimensions in Inches

Type	A	B
TTA	16½	21¾

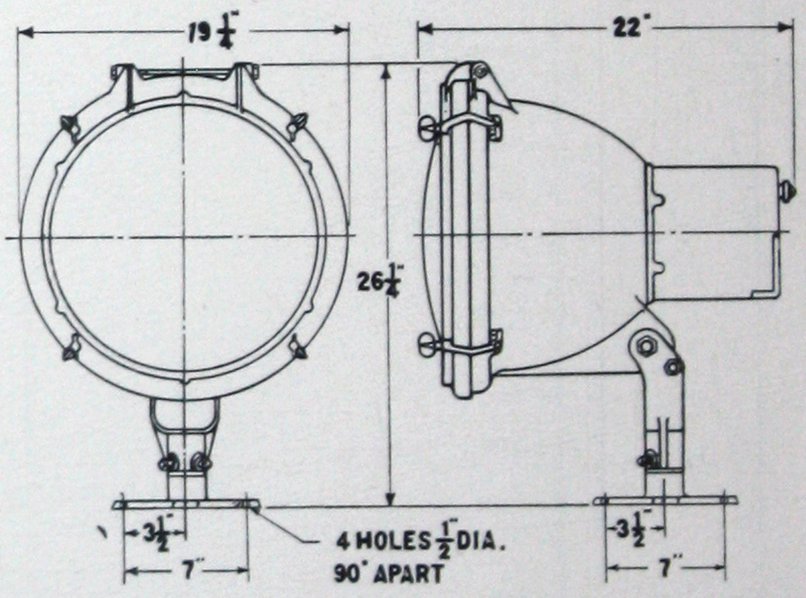
Types DCX and DCY



Dimensions in Inches

Type	A	B	C	D	E
DCX-14	18	46	35	14½	17
DCX-24	20	61	50	22⅝	30
DCY-14	18	35	35	14½	17
DCY-24	20	50	50	22⅝	30

Type ADA-16



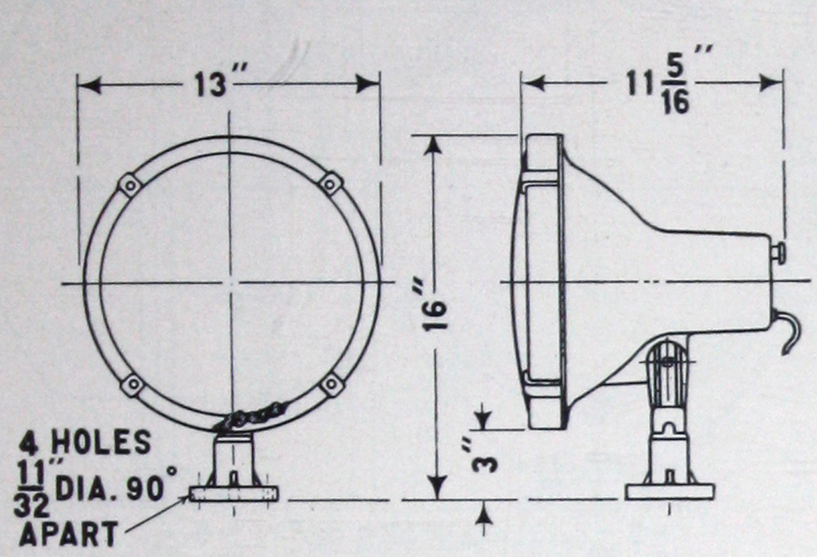
Note: Dimensions in this catalog are not guaranteed. They have been compiled with care (in most cases to the nearest eighth of an inch), and are sufficiently accurate for most purposes.

Dimensions are subject to change without notice.

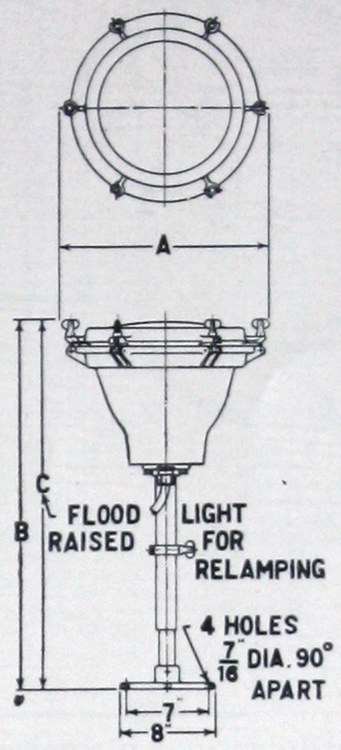
FLOODLIGHT PROJECTORS

Dimensions

Type ADA-12



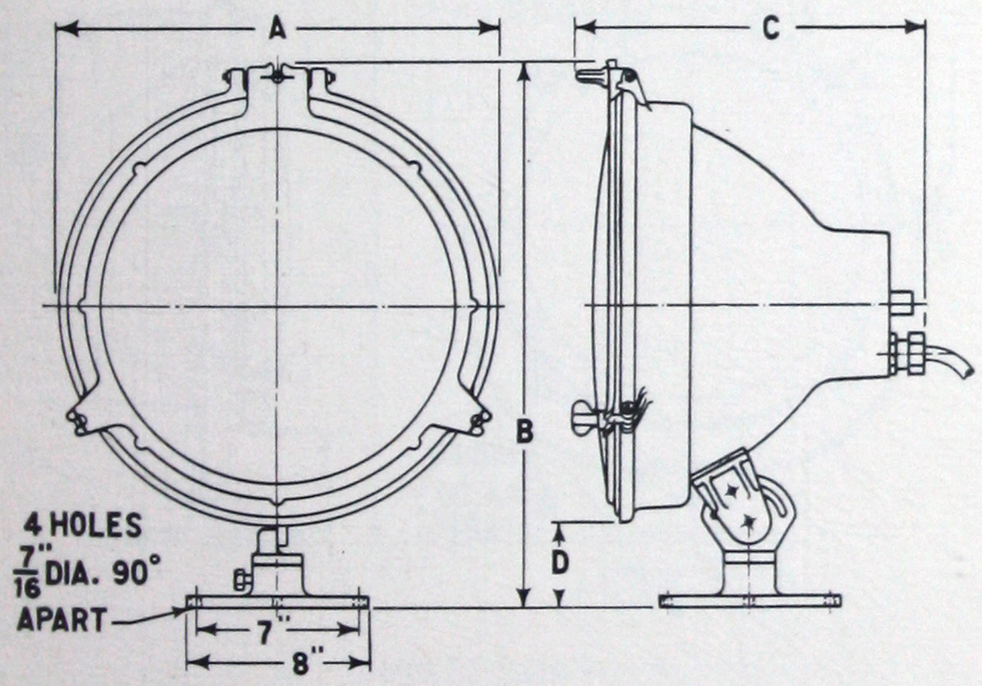
Type FDV



Dimensions in Inches

Type	A	B	C
FDV-12	17¾	31	37

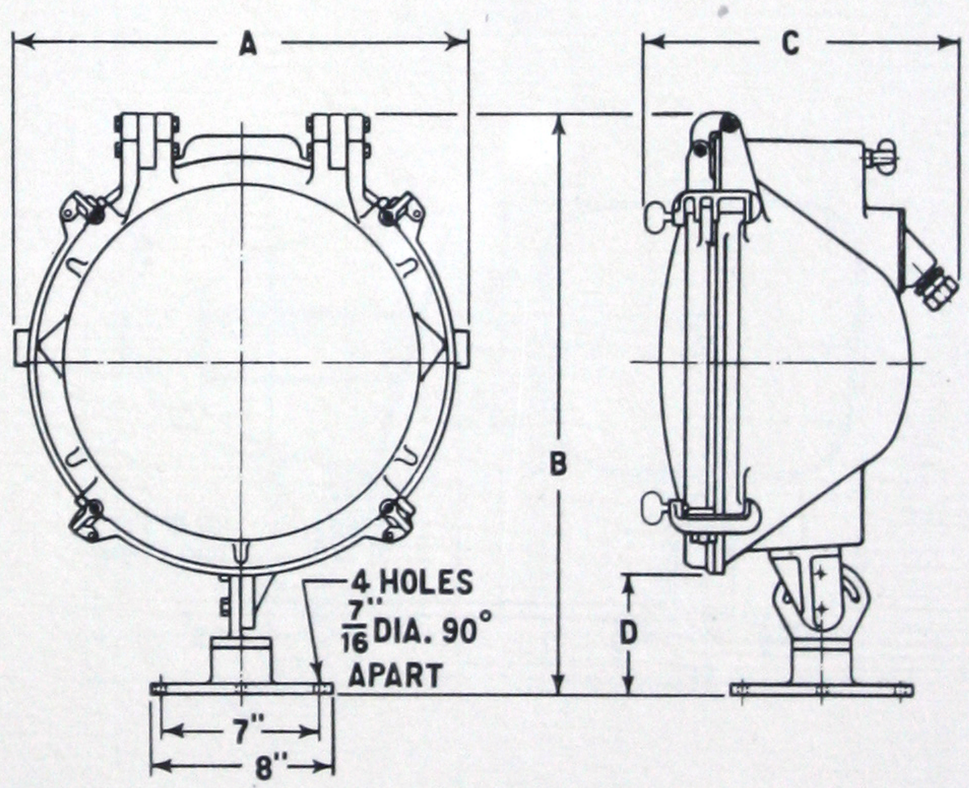
Types FDA and LDA



Dimensions in Inches

Type	A	B	C	D
FDA-12	16	21	13½	4
LDA-12	15⅜	20½	13¾	4¼
LDA-16	19⅜	23⅛	15½	3¾

Type LCA



Dimensions in Inches

Type	A	B	C	D
LCA-12	15½	22	8¾	4½
LCA-16	19¾	25½	14	5¼

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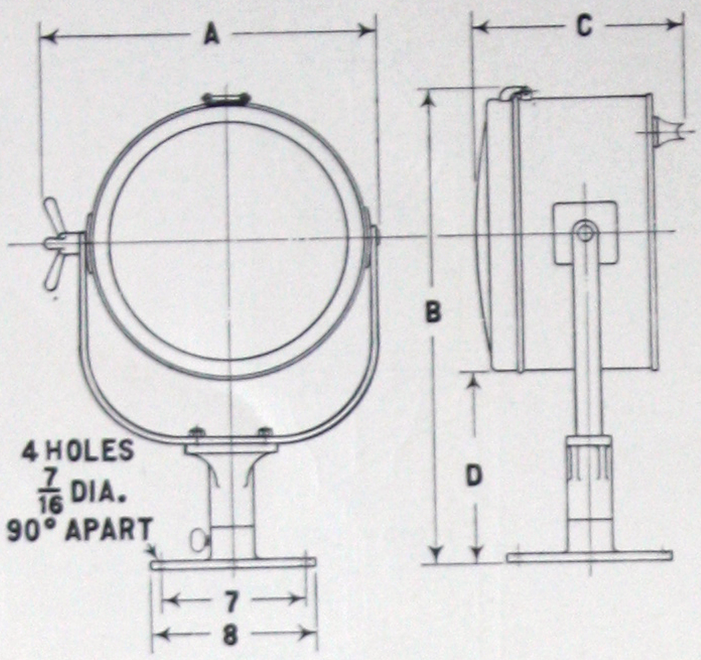
FLOODLIGHT PROJECTORS

Dimensions

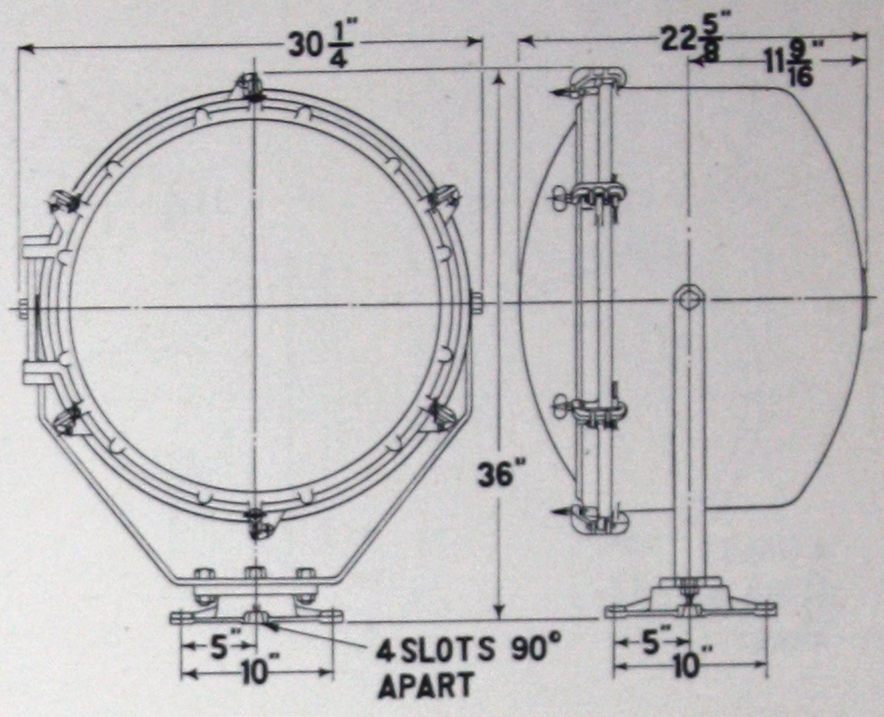
Types DCE-14 and RME



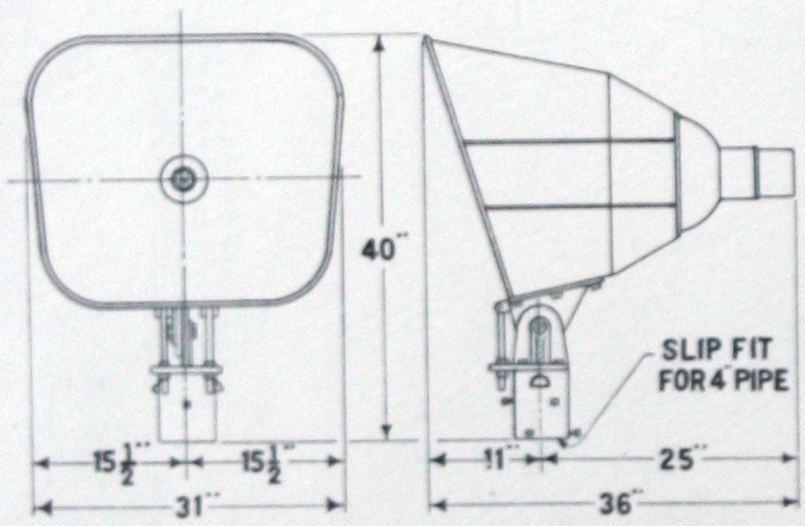
Dimensions in Inches

Type	A	B	C	D
DCE-14	19	24⅝	14½	7¾
RME-10	14	20¼	5¾	5¼
RME-12	16¾	22¾	6 5/16	5¼

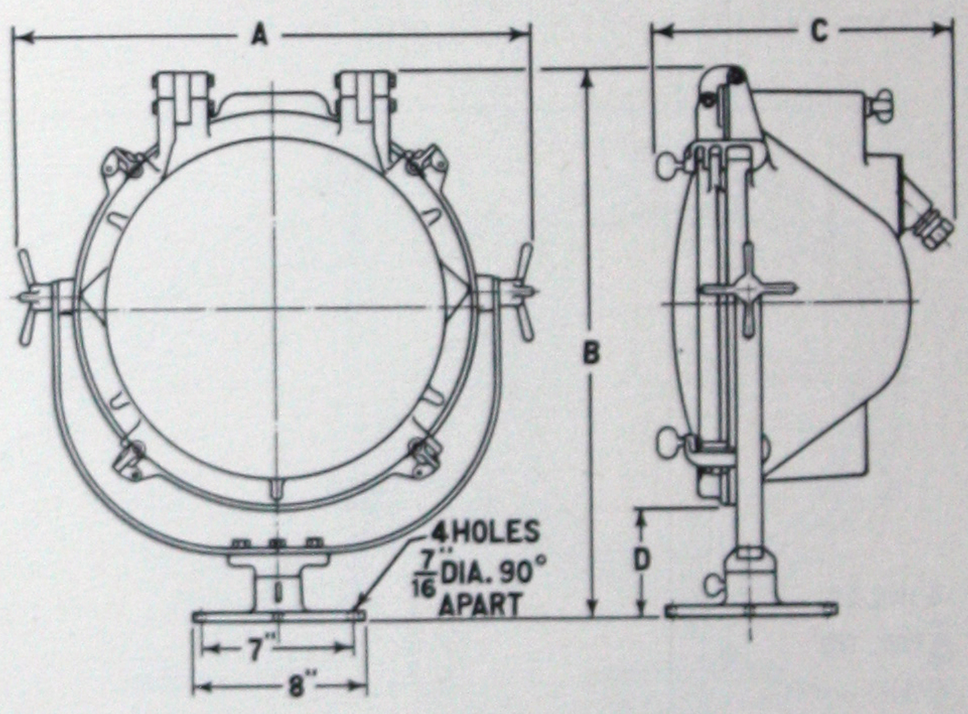
Type DCE-24



Type MSA



Types LCE-12, LCE-16, LDE, and TTE



Dimensions in Inches

Type	A	B	C	D
LCE-12	19½	22¼	8¾	4¾
LCE-16	23¾	25½	14	5
LDE-12	19⅜	21¼	13¾	5
LDE-16	23¾	24¾	15½	4½
TTE	19	21½	8	4¼

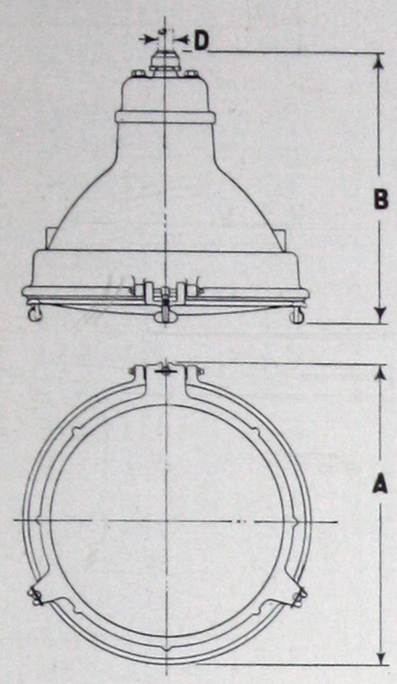
Note: Dimensions in this catalog are not guaranteed. They have been compiled with care (in most cases to the nearest eighth of an inch), and are sufficiently accurate for most purposes.

Dimensions are subject to change without notice.

INDUSTRIAL LIGHTING UNITS

Dimensions

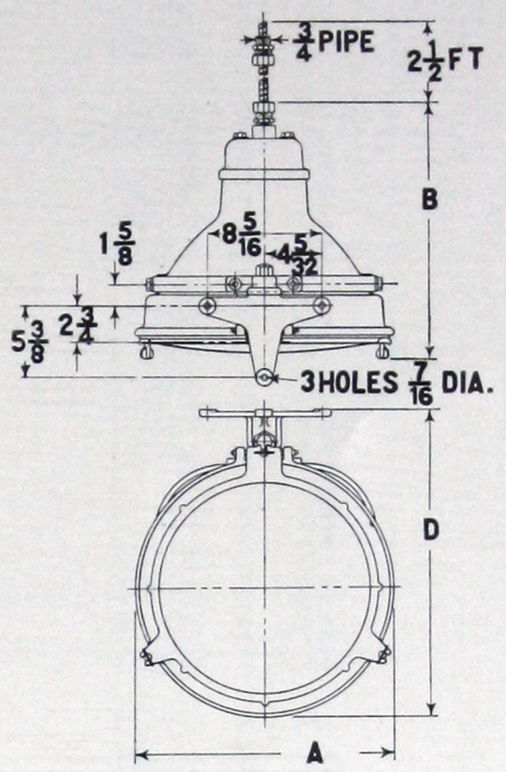
Types RAS and RLS



Dimensions in Inches

Type	A	B	D
RAS-12	15¼	11	½
RAS-14	18¾	15½	¾
RAS-16	20¼	15	¾
RLS-12	15⅜	16½	¾
RLS-16	19⅜	18¼	¾

Type RLU



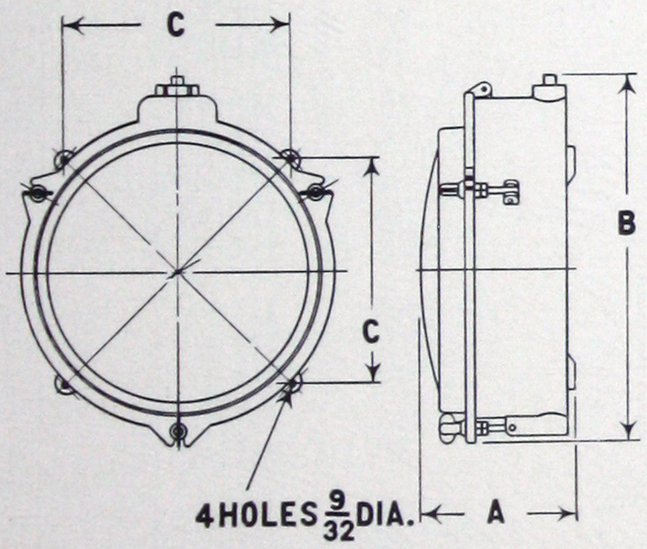
Dimensions in Inches

Type	A	B	D
RLU-12	15⅜	17⅝	18¾
RLU-16	19⅜	19⅜	23

FLOODLIGHTS

Dimensions

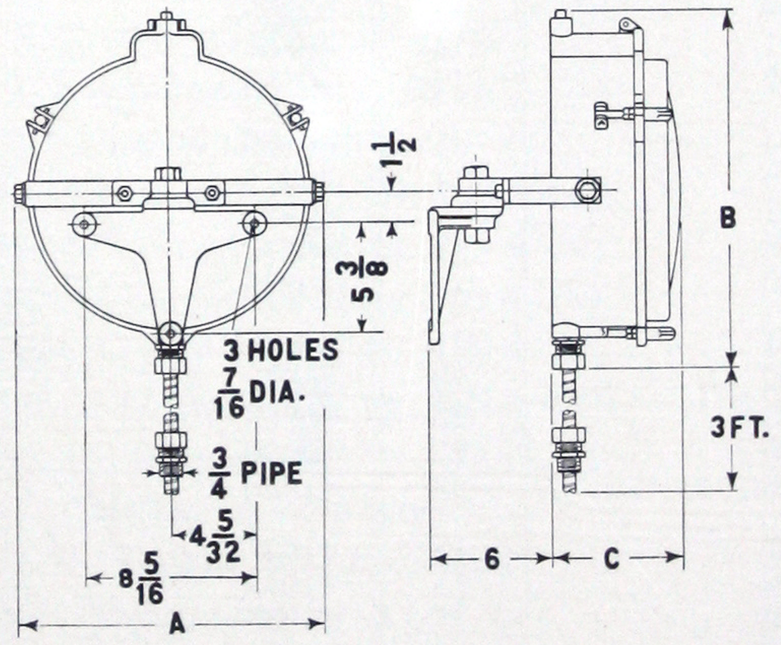
Type RM



Dimensions in Inches

Type	A	B	C
RM-10	5 ⅞	14	8⅜
RM-12	6 11/16	16⅝	10 1/16

Type RMU



Dimensions in Inches

Type	A	B	C
RMU-10	12⅝	14 13/16	5¾
RMU-12	15	17 ¼	6 5/16

Note: Dimensions in this catalog are not guaranteed. They have been compiled with care (in most cases to the nearest eighth of an inch), and are sufficiently accurate for most purposes.

Dimensions are subject to change without notice.

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Note: Floodlights no longer listed can be obtained on special order.

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